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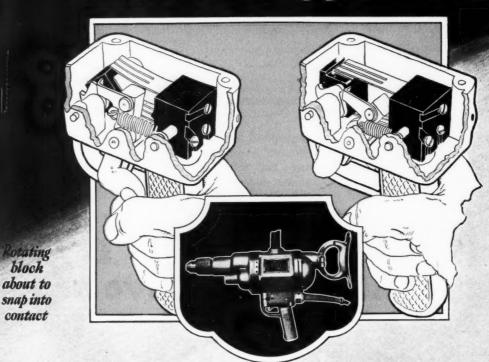
Thirty-five Cents a Copy Three Dollars a Year

T isn't the number of acars you deliver. It's the money you have in the bank. How long it takes old-fashioned dealers to learn that simple fact.

Edward S. Jordan
President
Jordan M.

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Contact block in the "ON" position

The genuine "Pistol Grip and Trigger Switch"

Found only on Black & Decker Portable Electric Tools. Pull the trigger to shoot current "ON". Pull it again to cut current "OFF". Current stays "ON" or "OFF", until trigger is pulled. Only three moving parts.

Simple---Durable---Effective.

An exclusive Black & Decker feature.

You can obtain Black & Decker Portable Electric Tools from your own jobber.

THE BLACK & DECKER MFG.CO.

Towson, Maryland, U. S. A. Lyman Tube Bldg., Montreal, P. Q.

# Every repair shop needs a WEAVER Motor Service Press

For fitting connecting rod assemblies

(Left) Twists and bends in the connecting rod can easily be detected by using the Test Block, as shown, and the rod removed to bed of press for straightening.



(Right) With this Attachment you can press out old rivets, punch new holes in brake lining for various size rivets and head and countersink both tubular and solid rivets---and do a better job in a fraction of the time usually required.



THE Weaver Motor Service Press brings within reach of every shop the services of a number of essential tools needed for every day work at a fraction of their cost if purchased separately.

It offers in one compact unit a speedy rack and pinion press, a five ton screw press, a piston aligning jig, a brake reliner and straightening fixture, as shown in the accompanying illustrations.

If you are interested in turning out better work at a lower cost, ask your jobber for complete information.



(Left) Crank shafts and other pieces requiring light pressure can readily be straightened on the Straightening Fixture, using the speedy rack and pinion leverage. Note dial gauge can be mounted in convenient position for testing shaft and the adjustable thumb screw can be set to prevent overspringing shaft.

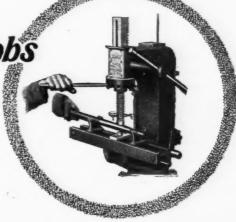
# For heavier pressure jobs

(Right) For work requiring heavier pressure the bar supplied with Press is inserted in wheel, as shown. In this way, pressure up to 10,000 lbs. can be developed on screw.



The best equipped shop gets the business

Weaver Manufacturing Co.
Springfield, Illinois, U. S. A.
Weaver Canadian Co. Ltd., Chatham, Ont.





May 2, 1922 OIL-REGULATING TYPE, \$1.00 EACH One to a piston

Up to and including 5 in. diameter COMPRESSION TYPE, 25c and up

# Specify PERFECT CIRCLES!

THERE is only one "oil-regulating" ring—the Perfect Circle.

The Perfect Circle Oil-Regulating ring is the only oil-ring generally adopted for standard equipment use by leading automotive engineers—the only oil-ring used by the big race drivers.

It has been used in the winning car in every major race since Decoration Day, 1922.

It is used as standard equipment in more than 70 motor cars, trucks and buses, including Cadillac, Packard, Marmon, Hupmobile, Franklin, Willys-Knight, Pierce-Arrow and others equally famous for their high standards.

The PERFECT CIRCLE is first of all a good piston ring—an ordinary ring would fail miserably if used with the exclusive PERFECT CIRCLE Oil-Regulating principle. The PERFECT CIRCLE Oil-Regulating ring controls the oil in a motor. It stops oil-pumping. It gives 1000 or more miles to the gallon of oil. And it increases the life of the cylinder walls through proper lubrication.

Because of its record of proved performance, the PERFECT CIRCLE *Oil-Regulating* ring is specified by progressive garagemen for every job. If you do not already know about PERFECT CIRCLES, write for descriptive literature.

INDIANA PISTON RING COMPANY, Hagerstown, Indiana JOHN H. TEETOR, President CHARLES N. TEETOR, Vice Pres. & General Manager Harkrader & Harkrader: Western Sales Agents, 1603 S. Michigan Ave., Chicago

# PERFECT CIRCLE Oil-Regulating Piston Rings

Vol. XLVI

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### Will You Benefit From These Advantages?

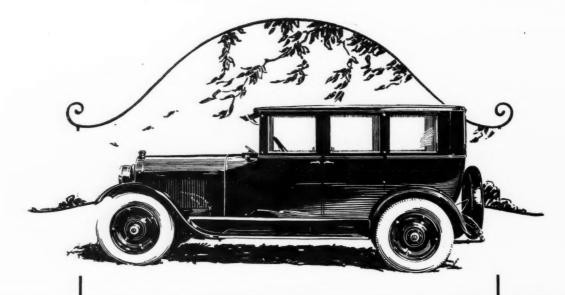
Today, as in years past, Federal national advertising is telling the motoring public that the Federal Authorized Sales Agency Sign indicates a first-class tire merchant who knows the motorist's needs and who can be relied on for fair dealing in everything from price

The result is that the Federal Authorized Sales Agency Sign brings bigger business and bigger profits to the dealer whether he be in Maine or California.

The Federal selling plan is generous and unique. The Federal products, the new Double Blue Pennant Cord, the Standard Blue Pennant Cord and Defender Fabrics, are reliable, good looking, long wearing and fairly priced

Why not take advantage of this unusual opportunity for profitable business.

Write now for information regarding the definite advantages of the Federal Authorized Sales Agency Plan.



### Do You Have to Depend on Transient Trade?

WHERE will your business come from next year? The year after? Five years from now?

Can you count on repeat orders from your former customers, or will you have to depend almost entirely on transient trade?

One of the greatest assets of Westcott dealers is an established clientele—a host of satisfied customers who would no more think of changing to another make of car than they would think of changing their habits of a lifetime.

If you would like to become the representative of a car of this character, a car that will build up for you a steady repeat-order business in the years to come, send for details of the Westcott Dealer Franchise.

President

The Westcott Motor Car Co. Springfield, Ohio





# The Eyes of the World are on the New Studebaker Cars



### STANDARD SIX 113-in. W. B. 50 H. P.

5-Pass. Duplex-Phaeton \$1145 3-Pass. Duplex-Roadster 1125

5-Pass. Coupe-Roadster 1395
5-Pass. Coupe . . 1495
5-Pass. Sedan . . 1595
5-Pass. Berline . . . 1650

SPECIAL SIX 120-in. W. B. 65 H. P.

5-Pass. Duplex-Phaeton \$1495 3-Pass. Duplex-Roadster 1450 4-Pass. Victoria . . . 2050 5-Pass. Sedan . . . . 2150 5-Pass. Berline . . . 2225

BIG SIX 127-in. W. B. 75 H. P.

7-Pass. Duplex-Phaeton \$1875 5-Pass. Coupe . . . 2650

7-Pass. Sedan . . . 2785 7-Pass. Berline . . . 2860

Studebaker Hydraulic 4-Wheel Brakes, optional equipment.

On all Standard Six models, with 4 disc wheels and spare rim, \$60.00 extra. On all Special Six and Big Six models with 5 disc wheels, \$75.00 extra.

(All prices f. o. b. U. S. factories, and subject to change without notice.)

THE STUDEBAKER CORPORATION OF AMERICA, South Bend, Indiana

THIS STUDEBAKER YEAR I S

### TRUE PRODUCT OF A HIGH PURPOSE

THE augmented and strengthened organization producing the Oakland Six is guided by one unvarying ideal.

That ideal is to win and hold and reward the confidence of the American public through the sheer value of a well-made product.

To the attainment of this ideal, this strengthened Oakland organization has dedicated all of its skill, experience and resources.

And reinforcing these are the almost unlimited resources of General Motors, pledged to the same high purpose.

Consequently, new quality and new value characterize the Oakland Six.

True product of a high purpose—fleet, worthy, beautiful—it is not surprising that the car is winning and holding the good will of all who buy it.

Oakland Motor Car Company, Pontiac, Michigan



—and when he's finished, the truth about motor car parts stands forth as naked and unpolished as the parts themselves.

"Is there much left of the bearings of a motor car by the time it gets down to you?" is a question put to Jimmy Lyda, veteran wrecker, Bennet Bros., leading firm in Pittsburgh.

"Depends on the bearings," replied Lyda. "There's a lot left in a Timken Bearing. It's adjustable, you know. Wear don't hurt nothin'. If all there was to the old tubs we get was Timken Bearings, a little tunin' up and they could start all over again."

THE TIMKEN ROLLER BEARING COMPANY CANTON, OHIO

Columbus, O.-Walkerville, Ont.-Birmingham, England-Paris, France



TIMKEN Tapered





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**Touring Car** 

senger 5-Passenger

Four-Door

T-6 Special

All on the famous Reo 6-cylinder double-framed chassis

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Mighty Speed Wagon
12 Body Styles

Parcel Delivery
1000 lb. Capacity

# All designed and manufactured in the big Reo Shops,— not assembled

REO MOTOR CAR COMPANY

LANSING, MICHIGAN

# MOTORAGE

Vol. XLVI

Chicago, October 16, 1924

No. 16

# Meeting Competition That Cuts the Percentage

The Automotive Merchant With a Reputation for Service, Quality and Reliability Finds It Easy to Get a Fair Price for His Merchandise

By SAM SHELTON

Profit vs. Volume-No. 5

It is one thing to calculate the profit that the automotive merchant should get on every sale and another thing actually to enter it on his bank book. We have seen that the automotive business in its fundamentals is like any other business and that the established principles of merchandising that have led to success in other lines will lead to success in our own particular industry.

It follows that the same difficulties that stand in the way of success in other lines of business bob up like little demons to harass the automobile dealer and maintenance merchant in their struggle to achieve an adequate net profit. We have seen that the percentage of markup by which the selling price is established is the true measure of profit, rather than volume, and now we run up against the fact that one of the most formidable obstacles to profit is the price cutting, or underselling, by which the percentage is reduced almost to the vanishing point.

Occasionally we find a merchant in the automotive field, as in other fields, who chooses to combat this sort of competition with fire—that is, he shaves the price a little deeper and strives by means of increased volume to garner unto himself enough net profits to make it worth while, or possible, to remain in business. For every one who succeeds by this method there are a dozen who fail.

### "Gyps" Not Only Price Cutters

In the field of accessories and tires the price cutter is commonly called a "gyp", not merely because he undersells, but because in many cases he works off substitute goods for those that are advertised. The result is that he actually does get as high a percentage, or higher, as that legitimately prescribed for adequate net profit. And the customer gets either an inferior or a misrepresented article. But occasionally there is a merchant who consistently sells standard goods at prices below the regular list. He constitutes the most dangerous competition for the merchant who wants to do business along safe and constructive lines, while the competition of the so-called "gyp" is not nearly so much to be feared.

The only object in price cutting is to achieve volume of

sales and the only reason for desiring volume is to collect a satisfactory total net profit. For instance, if the merchant wants his business to return a net profit of \$5000 and his percentage of net profit based on selling price is only 2 per cent he will then have to do a volume of \$250,000 retail. But if he gets a net profit of 5 per cent his volume will have to be only \$100,000 at retail to return his desired aggregate net profit.

No man would think of driving his automobile 250 miles to reach a given point when there was a road equally as good and leading to the same place only 100 miles in length.

In the retail selling of automobiles there is a form of competition equally as reprehensible as that of the "gyp". It is the cutting of price by means of an overallowance on a used car. Time after time the public sees and hears of instances of automobile dealers allowing a trade-in value on a used car far beyond the known selling value of that old vehicle. This means only one thing—that the dealer has sacrificed a considerable proportion or all legitimate profit in order to make a sale and increase his volume. It is too well known to deserve comment that in hundreds and thousands of cases the volume was not a successful substitute for percentage and the dealer failed.

To the merchant who understands a few of the simple, but fundamental laws of economics the overcoming of this kind of competition is not nearly so serious a matter as at first it seems.

The first principle is that a business deserves to exist only if it renders a SERVICE to the community from which it draws its customers.

The second principle is that a business prospers in proportion as it SERVES.

It is then by serving his public in the highest sense of the word that the conservative merchant in the automotive field or any other may expect to build up a profitable and enduring business in the face of price-cutting competition.

Let us contrast the merchant who serves with the one who does not. The one obtains the regular list price, which has been established on the basis of fair value, or an adequate price which he determines himself on the same basis, PROFIT STARTS WITH BUYING

buys too much, or buys the wrong kinds of goods, he very

likely finds that he cannot make a profit on the resale.

chant to know how to buy as it is for him to know how

It is just as important for the good automotive mer-

In the next article of this series Mr. Frank M. Comrie,

a keen student of merchandising, lays down some of the

fundamental rules to be observed in buying merchandise

for resale. This will be the first of five articles dealing

with the relation of various phases of buying to the mak-

AGE are: Profit the Motive of All Business, Sept. 18; A

New Business but Old Principles, Sept. 25; Where Profits

Come From, Oct. 2; How to Determine Markup for

Articles heretofore published in this series in Motor

VERY merchant who sells goods at retail must first 

for the merchandise he sells, knowing that customers who appreciate quality and reliability, coupled with service, will gladly pay these fair prices. The other uses cut prices to attract trade to his store in lieu of any other impelling considerations. He does not depend upon the quality of his goods or any confidence that the customers may have in

The result is that the latter type of merchant attracts to himself a shifting custom that rarely repeats, while the

to sell.

ing of profit.

Profit, Oct. 9.

former builds up a permanent following that buys from him repeatedly because of the confidence and satisfaction that he delivers along with his merchandise.

The chief allies of the successful merchant in combatting underselling are, therefore:

Service Quality Reliability

Let us consider a few examples. In the city of Chicago numerous stores advertise automobile accessories at cut prices. The goods may be of standard advertised make, but more often they are of unknown brands.

Sometimes installation is included in the price and sometimes not. It is often found by the customer that the article sold over the counter is an imitation of or substitute for the one that the advertisement led him to believe he would get. Naturally even though he makes the purchase he is displeased because he knows he has been humbugged. Sometimes the article proves to be in fact of the brand the customer expected, but not of the right type or model for the automobile for which it is sold. In other cases the installation is faulty. But in no case does the customer have recourse from the merchant, who blandly disclaims any responsibility for whatever fault may have been dis-

Let us take on the other hand the accessory merchant who sells quality goods at profitable prices and stands back of them. He will quote the customer a price for the article installed which takes into account the fair value price of the article plus a fair charge for the work of installing. He is a merchant who delivers satisfaction along with his merchandise and is proud of it. First he makes sure that the accessory he sells is the one designed for use on the particular car for which the buyer wants it. That is service in its highest sense. Next he installs it properly so that it will function as intended and without harm to any other part of the car. That is QUALITY SERVICE. And then if anything goes wrong with the device than can in any way be attributed to the fault of the article or of his

workmanship he makes it good. That is reliability.

There will always be many customers who will buy whatever they want from toothpicks to automobiles wherever they can obtain it at the lowest price. It often costs them more in the end than if bought at a fair price from a reliable merchant. On the other hand there are persons who insist upon knowing that the merchant behind the goods they buy is reliable and ready to serve them, and fortunately there are enough of this type to make possible some of the greatest retail establishments in the country.

It is necessary, therefore, for the automotive merchant who is troubled with price-cutting competition whether in the sale of cars, accessories, tires or maintenance, to emphasize above all other things the service, the quality and the reliability that goes with every sale he makes.

When he does that, and when he convinces the public that he lives up to that ideal, he can safely quote his own profitable prices in direct competition with the other fellow's "gyp" prices and be sure of getting a large enough share of the business to make his establishment one in which a fair profit is earned although its volume may not be quite as large as that of some others.

(The next article in the series on Profit in the Automotive Business, to be published in the next issue of MOTOR AGE, will be entitled "Profit Starts With Buying." It is by Frank M. Comrie, a well known student of merchandising, who in this article has very clearly analyzed the importance of buying to the man who hopes to sell at a profit.)

### Quick Service Washing Station Gets Business

LARENCE ELSTER of Cleveland, O., has again demonstrated that the adaptation of a clever idea to the sale of an article will produce results.

Mr. Elster has made a great hit with his service in washing automobiles. First he selected East 30th street and Euclid avenue, one of the very busiest corners in the city, as the place to establish his washing service. There is a vacant lot on the corner and he leased it. First he laid down a cement floor. had placed five water pipes, each pipe extending the length of the cement floor, and each one about three and a half feet in height. From each of these pipes there are five faucets to which hose are at-Through these the water is tached. forced by the regular city water works pressure for the washing of automobiles.

Over the floor and over the pipes, Mr. Elster erected a good sized tent. Off to the side of the tent, he established his office in another tent. The cashier occupies one corner of the office tent. In the rest of this office space there are comfortable chairs, in which the patrons may rest, and at the same time watch the workers give their cars baths. patrons are thus able to see what sort of a job is being done.

Mr. Elster puts a car through in 10 minutes. There are four racks on which to run through cars, and three cars can be placed in each rack—the rack being merely the cement floor, with the water pipes on each side. That means that 12 cars can be run through this bath house

simultaneously. The prices range from \$1.75 to \$2.50.

Mr. Elster, with a view to advertising his service, left all sides of the tent open. Thousands of automobilists as they drive past see the cars being bathed, and at once are reminded to look over their own machines. In the evening, the advertising is even stronger. Then the interior of the tent is illuminated with electric lights, and the whole operation can be viewed from the street.

At a very little extra cost, a roof can be put over the cement floor when the weather gets colder, and the business can be continued in the colder months. But when summer comes again, Mr. Elster says he wants to put up the tent again.

# Coast to Coast Show Program of M. & A. M. A.

Exhibits Sanctioned in New York, Chicago, Cleveland, Boston, Kansas City and San Francisco

HE Motor and Accessory Manufacturers Association has expanded its show program for 1924, and in addition to the National Automobile Shows at New York and Chicago and the sectional show at Boston, will participate in the sectional shows at Cleveland, Kansas City and San Francisco.

In all these shows the M. & A. M. A. has contracted for preferred space and will assign it to individual manufacturers of motors, parts, accessories, service equipment and kindred products.

Negotiations for participation in these shows were concluded by M. L. Heminway, general manager, and Neal G. Adair, manager of the show department of the M. & A. M. A., in time for announcement at the association's annual fall convention, held this week in Cleveland.

### Show Program Expanded

The M. & A. M. A. officials announced that the show program had been expanded to meet the requests of members desiring to show their products in distribution centers other than the three in which they have previously exhibited. In arranging for these additional shows, the M. & A. M. A. selected those in wholesale distribution centers located strategically throughout the country. In all these cities are large distributors of cars, trucks and varied lines of automotive equipment.

The expanded show program covers a sweep of territory from coast to coast, with shows as follows:

New York, Jan. 2-10 (National), opening with two days of exclusive trade attendance

Cleveland, Jan. 17-24.

Chicago, Jan. 23-31 (National), opening with two days of exclusive trade attendance.

Kansas City, Feb. 7-14.

San Francisco, Feb. 21-28.

Boston, March 7-14.

In the New York, Chicago and Boston shows the M. & A. M. A. will assign space only to its members; in the other shows to both member and non-member manufacturers

### Of High Merchandising Value

Summarizing the merchandising power of the seven shows in the 1925 program, the M. & A. M. A. show management says:

They are held in the country's most important automotive distribution centers.

They are big shows, expertly managed and with good showing facilities for parts and accessories.

They draw large public attendance, sev-



Map showing Coast to Coast sweep of shows in which accessories, parts and automotive equipment will be exhibited by M. & A. M. A. members.

eral of them exceeding 100,000 and all aggregating upward of three-quarters of a million people.

They are attended by thousands of men in the trade—distributors and dealers in cars, jobbers and retailers of parts, accessories and service equipment, service station operators and garagemen. Many car dealers are in virtually compulsory attendance at dinner rallies held by the car manufacturers and distributors during these shows.

They are shows that will build business for exhibitors.

The sectional shows particularly draw many jobbers, specialty distributors, dealers and service men who have neither the time nor the money to visit the national shows.

### Story Told in Booklet

The M. & A. M. A. has issued an illustrated booklet telling the complete story of the 1925 show program.

The addition of Motor and Accessory Manufacturers Association exhibitors to these various regional shows promises an expansion of service to the industry which may well result in increased sales and certainly a greatly increased interest in the shows on the part of the trade and public generally.

In the past only the trade and the public in the territory of the great national and Boston shows have had an opportunity to view a really representative exhibit of all that goes to make up the automotive industry. In the smaller shows the greater part of the exhibition has of necessity been made up of auto-

mobiles only, with the other spaces occupied principally by local concerns which had the courage to invest their money in hopes of stimulating their equipment sales.

The expanded program of the M. & A. M. A. will take to tens of thousands a fairly complete exhibition of automotive equipment, service shop machinery and equipment, parts, etc.

Of particular value will be the showing of modern service shop equipment, for this will enable garagemen and service shop managers to see and examine the equipment that has been developed so highly in recent years to raise the efficiency of automotive service with its consequent lowering of cost to the car owner and multiplying of profit to the shop owner.

Thousands in the trade who have never had an opportunity of visiting the national shows will now find it possible to see a truly representative exhibition representing the automotive industry as a whole.

### Success Depends Upon Promotion

Much of the success of these sectional shows under the new arrangement will depend on the manner in which they are promoted. But the past performances of the managers of these exhibitions is a guarantee that the promotional work will be highly efficient. Each of these managers is an expert of long experience in show management and promotion.

Attendance records will doubtless be broken at the 1925 shows in these cities.

# It Pays to Tell Truth About Used Cars

The "Problem" Is Mostly an Individual One for Each Dealer to Solve, Says
St. Louis Distributor

By W. H. WILLCOCKSON

Secretary and Director of Sales, Vesper-Buick Auto Co., St. Louis (An address delivered before the St. Louis Automotive Dealers' Association.)

A PROSPECT came into the used car sales room of a firm with which I was associated a few years ago. He looked at a number of used cars, but his interest centered on one six-cylinder car that was in excellent condition. The paint looked new, and everything about the car looked almost new. The tires were beginning to show a little wear, but not enough to be serious. After looking the car over very critically he abruptly asked the salesman, "Is that speedometer right?" The salesman immediately answered, "No, it is not. That speedometer shows about 1,800 miles, but the car has been driven around 12,000 miles. The original tires were worn out and the present rubber was put on a short time ago." The prospect looked at the salesman in amazement and said, "I'll take the car. That is the first time I have heard the truth about a used car today, and I have been looking for a good used car since early morning."—From Mr. Willcockson's address.

A FTER the endless discussion and study of the used car and its effect on the dealer organization of the entire country, it is very difficult to approach the subject from a new viewpoint.

In the first place, the automobile dealer of today is called upon to face an entirely different situation than can be found in any other business. He is called upon, yes, forced to take in as part payment for new merchandise, used merchandise, on which his customers are setting the trade-in-price, and then when he goes out to sell that same used merchandise, his customers set the selling price. It is a complex problem, and difficult to solve. When you view the situation from that standpoint, it is not hard to see why so many good capable men fall by the wayside.

We are all united in one thought, and this is, that the dealer must use better judgment and exercise greater care in buying used cars.

I dislike to use that time worn expression of "Buy Them Right," but I know of no other combination of words that will carry a fuller meaning.

Nearly all of the dealers who have faded out of the picture, during the last two years especially, have gone mainly because they have not had the proper regard for that first cardinal principle. No wonder we constantly hear such sayings as the "Used Car Menace."

### Each Dealer Is Master

Each dealer is very much the master of his own situation and in view of the fact that he is likely to use his own judgment in trading, education regarding proper methods seems to me to be the only solution.

Great strides have been made during the last two years, especially as is evidenced by the figures given out by the National Automobile Dealers' Association, which shows that used car losses were cut from \$200,000,000 in 1922, to \$57,000,000 in 1923. Of course, these fig-

ures are not exactly right, but at the same time they are reasonably accurate, and accepted as conservative.

Numerous "used car plans" have been tried out, and I will have to admit that I have never seen one worked successfully. Consequently I am inclined to believe that it is next to impossible to formulate one that will work universally. Any plan that will tend to establish the right trade-in-price is a step in the right direction, as it will have a tendency to keep various dealers from bidding different prices on the same used automobile. The whole affair is a dealer problem which must be thrashed out in the organization.

### Little Hope of Factory Help

There is little hope of the various factories taking a hand. They contend that the "used car situation, or menace" is a child of the dealer and should be corrected by him. They are largely right, of course, but not entirely.

There are things which are beyond the dealer's control, and which actually force long trades, but these things are only occasional.

For example, take a dealer who is not strong financially. His old friend, the banker, may ask for a stipulated amount of money on a certain day. Usually he is in earnest. The answer is simple, as two and two makes four. Mr. Dealer must slide out and make a few long trades to come through, all of which will probably mean losses.

A change of models presents a problem for immediate action. The dealer usually knows nothing about the change until about 30 days before the new models start coming in. He should accept the situation as it is and get busy immediately, in other words, clean house as rapidly as possible, for it is always better to sell the old models even at the expense of some long trading, than to carry them too long, until the new models come in and then suffer a much greater loss from trading through necessity.

There is a host of successful dealers in every city and state, and an analysis of their businesses always develops the fact that they train their salesmen to sell the new car first, then appraise the old at the proper figure, a figure where it can be sold without wasting a lot of time and money on it. If the deal can not be made on the right basis they pass it up, for a transaction that does not carry profit with it is worse than no transaction at all.

With this class of dealer the idea of appraising "by guess or by gosh" is a thing of the dim past, and the used car is not a serious problem with them. Contrast this with the dealers who allow their salesmen and customers to sell them on over appraisals, and blindly accept these over appraisals, as many are still doing.

### Would Use Blue Book

Were I running a used car department, I would equip myself with every bit of information to be had so that when appraising time arrived. I would be in a position to prove to the owner of the car that my figures were right. I would use the Blue Book and let him see it. I would use lists of local associations, if they had any, and let him see them. I would also keep an up-to-date clipping file of the used car ads from the previous Sunday paper, which can always be used to advantage in showing the owner what his old automobile can be sold for. I would build a fence around my bid after giving it and if Mr. Owner kicked over the price, I would prove to him that I was right and that if I bid him something like \$200 more than I could get for his merchandise, then he would have reason to be afraid of me, for there would be a nigger in the woodpile somewhere.

Summing this part of it up, I just want to repeat that old time-worn expression "Buy Them Right." 24

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If a used car is in good running condition and you have the right figure on it, you certainly are not going to have very great difficulty in passing it on to the other fellow.

In the sale of used cars there are several things that help wonderfully aside from the fact that their appearance must be good, they must perform well, and be priced right. I think the most important of all is to tell the absolute truth to the prospect about the particular car in which he is interested.

When a salesman who may or may not know something of the history of the car reaches out into thin air and makes a lot of statements which he cannot substantiate—the prospect naturally loses interest.

As an example: A prospect came into the used car salesroom of a firm with which I was associated a few years ago. He looked at a number of used cars, but his interest centered on one six-cylinder car that was in excellent condition. The paint looked like new, and everything about the car looked almost new. The tires were beginning to show a little wear, but not enough to be serious. After looking the car over very critically he abruptly asked the salesman, "Is that speedometer right?" The salesman immediately answered, "No, it is not. That speedometer shows about 1,800 miles, but the car has been driven around 12,000 miles. The original set of tires were worn out on this car, and the present rubber was put on a short time ago."

### "I'll Take the Car"

The prospect looked at the salesman in amazement, and said, "I'll take the car. That is the first time I have heard the truth about a used car today, and I have been looking for a good used car since early morning."

The salesman told the truth. He had the prospect's confidence—and the prospect bought. Telling the truth about used cars not only builds confidence in the salesmen, but builds confidence in the houses they represent.

Another case where the salesman told the truth about a used car, and then added a little history about it helped to put over the deal. This salesman told the prospect who the owner of the car had been, along with a lot of facts which he knew to be absolutely the case regarding the way the old owner looked after the car.

The prospect asked for the owner's name and checked up everything that the salesman had said, and to his great surprise, found that the story was absolutely correct. He came back and bought.

With the rush of other matters which the automobile dealer has to look after today, it is very easy to let the salesmen who are selling our used cars give the wrong kind of stories to the public. The manufacturers each year, and a great number of dealers, too, spend fortunes in money, and an unlimited amount of time in training men to sell new cars—and the used car side of the business is al-

lowed to shift for itself to a great extent. A real "honest-to-goodness" used car salesman—the kind who can keep the old ones moving out—is a pearl without price, and if the industry generally would educate a portion of its men to be real used car salesmen—it would only be a short step to knowing that the used car proposition had subsided from a "menace" to a well organized moneymaking department of the dealer's business.

The live and alert dealer hops on to the used car the minute it comes into his place, and sees that it is made salable at once. Then he gets his salesmen behind it, and if the price, appearance, and other features are right—a sale is very likely to be made without delay.

I know one dealer who moves a surprising volume of used cars in connec-



W. H. Willcockson

tion with his new car agency. Reconditioning of these cars is begun the day they come into his place, and they are not allowed to tarry along the line to the show room floor. His salesmen are furnished daily with the list of cars that must be moved, and when some one car develops into a "sticker" they hear a good many things about that particular automobile until it is moved out of the front door. This dealer is selling an increasing quota of new cars every year, and strange as it may seem, he is not very much worried about the terrible "menace" of the used car situation. So far as he is concerned, "there ain't no such animal."

Even the best used car men in the business and the wisest appraiser along the row gets stung in a trade now and then. He finds occasionally that instead of taking in a salable automobile he has purchased a pile of "junk". The next thing for him to do is put the right price

on the old wreck and dispose of it. Frequently the best bet is the "junkman" in a case of this kind.

No one wants to handle merchandise at a loss but it is far better to stare a loss in the face and accept it as a fact, and then get out from under as quickly as possible. Doing this gets the transaction out of the way,—and prevents a used car from "eating its head off" in storage, depreciation and service charges.

A review of the whole used car situation boils down to only three things: First, Buy Them Right; second, Tell the Truth About Them; third, Keep Everlasting Behind Them.

From my own personal experience, and from the experience of a good many dealers whom I have had the pleasure of observing, I believe that there lies the solution of the "used car menace."

### ABOUT HIGHWAY ENGINEER QUALIFICATIONS

The National Research Council, through its Advisory Board on Highway Research, has recently issued as Bulletin 45, a report on "Minimum Specifications for Highway Engineering Positions." The report was prepared by a special committee appointed by the American Association of Engineers. This committee, with A. B. McDaniel as Chairman, has had the official cooperation of the United States Bureau of Public Roads and of several State Highway Commissions and Municipal Bureaus.

The report lists the essential qualifications for the filling of 17 typical highway engineering positions. It also presents a series of 117 actual problems which have arisen in the everyday work involved in carrying out the duties of the various positions. The solutions used are given in some instances and are available for all the problems.

This book of 105 pages with 32 linecuts and numerous tables may be obtained from the Washington Office of the National Research Council for \$1.

### CARBURETION IN THEORY AND PRACTICE

A book which goes thoroughly into the theory of carburetion is announced by the publishers, Crossby, Lockwood & Son. Stationers Hall Court, E. C. 4, London, England, the author being Robert W. A. Brewer. In addition to giving the operating principles of the typical carburetors on the market this book explains the theory of vaporization and evaporation goes into the question of air and heat required, discusses inlet pipe and inertia and the flow of fuel through small orifices, discusses Brewer's fuel orifice, special jets, moving parts, float chambers, gasoline substitutes and exhaust gas analysis. It should be a useful volume to the man who wishes to get an insight into the theory of carburetion and the nature of motor fuels now on the market.

# Open Territory Increases Dealer Losses, Says Association Manager

By A. J. KNAPP

Manager, Iowa Automotive Merchants' Association

THE above caption is a bold statement based upon frank statements of many dealers and distributors whom I have interviewed during the last few months. Many of the statements were made by "old-timers" who have operated under both closed and open territory contracts.

It is true that not all are one hundred per cent for closed territories. Occasionally I have found a distributor who believes in open territory but is reluctant to grant it to his dealers in the retail territory that he calls his own.

Then, too, I find other distributors who believe that all territories outside corporate limits should be open, and some of the latter ask nothing of their dealers that they themselves are unwilling to grant.

Evolution of production methods made necessary many changes in methods of distribution, and it probably was wise for a time to throw territorial lines into the discard in order that competition between dealers in a given line might produce a greater volume of sales.

### No Premium Today on Special Effort

That was particularly true four years ago in respect to certain low-priced lines of cars, and there is no doubt in my mind that in many respects the free-for-all fight was beneficial to many dealers—beneficial in point of far greater efficiency in operation of plant and sales promotional effort. But what was true then and advantageous to dealer and factory alike I believe is still, in a sense, good for the factory but highly disastrous to the dealer.

What incentive is there for special effort in selling automobiles of any given line in a wide territory, where there is the keenest competition between two to a dozen firms selling the same line, practically (as far as the public knows) the same service and the reward a lot of used automobiles—units of transportation for the public but vehicles for price cutting on the part of the dealers?

I know of one former distributor in the low priced field who had one of the very best dealer organizations. He had money and made a lot more. Then "bluey!" Away went the whole organization as direct dealers for the factory, and, in addition, he had some very stiff competition in his home town from other direct dealers.

Has that move been advantageous from the factory viewpoint? I do not know, but by comparing the sales in that territory with those of last year and figuring upon the percentage standing of that line in Iowa, I believe the factory accomplished only one thing, viz., the demoralization of a very fine distributor and dealer organization.

### Another Unfortunate Example

An "old" dealer in the low-priced field maintains one of the very best and apparently best managed plants in Iowa in a town of about the same size as in the other example. He started in with little capital but made progress and accumulated considerable money.

Although he had a rather heavy overhead that could not be maintained by the business of his local community, the territorial lines were practically removed

### Why Mr. Knapp's Statement Is Published

There is widespread interest among automobile dealers in proposed policy changes by which the dealer's opportunity to make a reasonable profit is improved. One of the changes advocated by many dealers is the elimination of open territories and the awarding of exclusive contracts for definite territories. Mr. Knapp believes that would be the proper course and tells why in this article which was originally published as an open letter in the Motor Trades Bulletin of the lowa Automotive Merchants' Association.

and three dealers were added in nearby territory. His volume suffered, and as competition grew more keen, he saw his surplus gradually wiped out.

I do not consider that his investment was excessive or unwarranted. On the other hand, I feel that a clean, upstanding merchant of that type is a tremendous asset to the industry and should be retained by being given a territory from which he alone would be assured of enough business to justify his investment.

### The Remedy

Open territory produces the very toughest problems of competing dealers in the same line. It causes the allowance of fictitious prices for used cars and, of course, demoralizes the used car market

I may be dead wrong, but, frankly, I believe territorial lines must be established, and in so doing great care must be given to the natural trend of the buying public toward specific trading centers.

Competition between different lines is

sufficient, indeed, to stimulate dealers to put forth every effort; but when competition between men selling the same make of car is added, the result spells two things, profits for the factory and losses for the dealer.

Quality merchants, men with brains and capital, will sell, at a profit, every motor car that the public will buy, but quality merchants will not be found in this or any other business unless policies and practices are introduced and maintained

There is a constant flow of business in automotive trade channels. If that flow is forced beyond business-like methods, there will be no semblance of a fair remuneration for dealers' capital and effort. Then follows the reaction, causing a slump in volume and again no profit.

We must look this matter fairly and squarely in the face—factories, distributors and dealers—and, in my humble opinion, cooperatively, in a spirit of fair play, determine upon the policies that should be adopted, for the greatest ultimate good of this splendid industry.

### Tempest and Flood

Nobody knows when disaster will strike.

Tempest and flood, earthquake and fire, accident and calamity are all things beyond human control.

It may be your city next and what will you do about it when the tragedy comes?

Alone you can do little, but united with a great organization, chartered by Congress to relieve suffering and distress, you can do much. That organization is the American Red Cross. If fire should raze your city tomorrow or a flood sweep the countryside, the Red Cross would be on the ground before the flood had receded or the embers ceased to glow, feeding the hungry, providing medical and surgical aid for the sick and injured and sheltering the homeless.

But the Red Cross cannot work alone. It needs you as much as you need it.

The time to give your assistance to the Red Cross so that it may go on with its Disaster Relief work throughout the country is during the Eighth Annual Roll Call which will be held from Armistice Day to Thanksgiving, November 11 to 27.

Your signature and a dollar bill is all that is necessary to join.

It is so little that is asked of you and the need is so great.

Surely you cannot refuse.

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# How to Remedy Squeaky Brakes

A LL sorts of reasons have been given for squeaky brakes and as many suggestions for correcting. To that end the following taken from the house organ of the Raybestos company should prove of value to the service men and repairshop operators:

"Nine out of every ten cases of squeaky brakes are caused by drum vibration. Some cars never squeak but, if a brake drum is eccentric or out of round to the extent of 1/16 of an inch, the drum will vibrate when the high places receive pressure. This vibration is absorbed by the lining on perfectly rounded bands and often the squeak is eliminated by adjusting brakes to obtain this perfect conformity of band and drum.

"However, this perfect roundness is difficult to maintain because in applying the brakes a certain degree of distortion occurs. This is especially the case when the brakes are jammed on hard in an emergency—or when subjected to long heating. Hence it is often necessary to take care of the squeak by other methods.

Therefore if adjusting the bands, washing the sand and grit from the lining, or any other preventive measures you might exercise, fail to eliminate the squeak, the use of any one of the following suggestions should aid materially in remedying the trouble.

"One of the most successful methods of stopping stubborn squeaks is the use of a small piece of rubber under the lining at the end of the band. A suitable insert is a 2x1-inch piece of 3/32-inch inner tube stock. This insertion raises the lining ever so slightly, thus effecting a damping or cushioning of the drum which stifles all vibration. (See drawing No. 1.)

"Although those who have adopted this method are unanimous in proclaiming that it does the trick, they differ, however, as to which end of the band is the most suitable location for the insertion. Whereas some place the rubber piece

NEW WAY

OLD WAY

ABOUT 45°

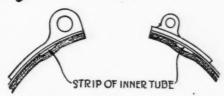
Drawing No. 2, illustrating angle cut of lining

under the lining at the upper end of the brake band, others think that the lower end is the logical place; hence, all we can say here is, use your own judgment—or insert beneath the lining at both ends.

"Realizing that squeak is usually a result of localized high pressure, the use of a cushion or dampner at the points at which high pressure is bound to occur seems logical to us and has proved satisfactory in practice.

"Another procedure used to advantage by service stations in doing away with squeaky brakes is the use of graphite. Dry flake graphite is better than oil for it will not grab as oil does when mixed with dust and other foreign particles that creep in. A knife blade is a convenient instrument with which to spread the graphite on the lining. A small quantity deposited at one end of the lining will rapidly work round the entire surface when the car is in use. The use of graphite on the lining. A small quantity common as it is realized that it does not appreciably lessen the efficiency of the brakes.

"William Orth, manager of the Trinidad Motor Sales Company, a Raybestos Brake Service Station at Trinidad, Coloradio, has been very successful in eliminating squeak or preventing its occurrence in reline jobs. At the back of the



Drawing No. 1, Illustrating Use of Rubber Inserts

band he cuts the lining at an angle of 45 degrees instead of having the ends at right angles to the side of the band. (See drawing No. 2) This gives the lining increased flexibility and also brings about conditions which tend to more readily throw off the dust, sand, and other such particles that cause squeak.

"Mr. Orth, desiring that fellow brake service men be informed of his good results with this method, submitted the above description for Silver Edge publication. Like the Woman's page with its "household hints", our columns are always open to "sensible service station suggestions".

#### OPEN CASTING PLANT

SOUTH BEND, Ind., Oct. 11.—The new foundry for gray iron castings of the Studebaker Corp. has been opened. The building is 680x720 and has capacity for the production of all castings necessary for 1,000 cars a day.

# 25 Years Ago In the Automobile Industry As Recorded In MOTOR AGE

(From MOTOR AGE of Oct. 17, 1899)

### Big Company Is Formed

On October 10 the Continental Automobile Co. was incorporated under the laws of New Jersey, with a capital of \$8,000,000. \* \* \* As a foundation for this capitalization the company has acquired all of the property, patents, manufactured stock, rights, good will, business contracts and the capital stock and bonded issues of the Winton Motor Carriage Co. of Cleveland, O.; the Manhattan Oil Motor Co. of Jersey City, N. J., and the National Motor Carriage Co. of New York City, delivered free of all liabilities.

This deal is the upshot of the negotiations which have been carried on for several months with a view to combining all the gasoline motor manufacturers who control valuable patents under one management.

### Autocar Company Organized

Among the new concerns which enter upon the manufacture of gasoline motor vehicles under favorable auspices financially and mechanically, the Autocar Company of Pittsburgh takes prominent rank. It succeeds to the stock and book orders of the Pittsburgh Motor Vehicle Co. and is organized to manufacture on a large scale the three types of vehicles which through two years of costly and

systematic experimental work have been brought beyond the experimental stage by the latter.

### Chauffeurs and Chauffards

The "chauffeur" who "scorches" but fails to show skill is called a "chauffard"; pronounce "shof-fur" and "shof-far", the "fur" somewhat broader than "fur" in English; "far" as "far" in English; accent equally divided between the two syllables in either case.

### Add Used Car Problem

FOR SALE—A second-hand Automobile. Price right. GILBERT J. LOOMIS, Westfield, Mass.

### Horseshoers Take Action

The National Master Horseshoers' Protective Association met in Pittsburgh October 10 and discussed, among other things, the inroads of the automobile on horse traction. Instead of railing against the automobile and its faults and passing idle resolutions to stop the tide of events. the Horseshoers' Association took the sensible course of deciding to do its share toward removing some of the objections to horses. It was decided to inaugurate a general movement to compel examination and licensing of horseshoers. Animals, it was argued, were frequently crippled and rendered useless by incompetent work.



Exterior of the Neil Brothers Electric Co.'s new building

# A Departmentized Automotive Electrical Shop

Neil Bros. Electric Co., Canton, O., Show How the Thing Is Done

ASTATION where service is a paramount consideration, one of the most completely departmentized dealer's establishment in eastern Ohio, is being conducted in Canton by the Neil Brothers Electric Co., pioneers in the automotive electrical industry there. In four years this concern has grown from a two-man business operating upon borrowed capital to an organization large enough to purchase its own building and employ a dozen persons. William and Dave Neil, brothers, are responsible for this innovation in automotive servicing—Canton's specialized transportation store.

Stressing quick as well as good service, this attractive appearing station, located on one of the country's main thoroughfares, is expected to develop into one of the busiest automotive service centers in that section of the state.

In its new building the Neil Brothers Co. is in a position to give service on batteries, electrical equipment, speedometers and tires. The extensive service available also includes a filling station and lubrication department, while the store itself invitingly presents a complete line of accessories and radio supplies, each feature of this comprehensive service being operated as a separate department.

### Feature Speedometer Department

A feature of their service being stressed in newspaper advertising is the speedometer department, which makes it possible to have any make of speedometer repaired in a very short time.

"The motorist wants his speedometer and he wants it quickly," said Dave Neil. "We aim to have it back in his car within the shortest time possible."

Last year was the first experience of the Neil boys in the radio business and it was taken on merely as an experiment.

"We found however, by keeping close tab on sales in this department that the month normally the slowest gave us the largest volume of business with this line combined with our electrical business," Dave Neil said. "Radio rightfully belongs to the automotive electrical store. Usually when handled by the music dealer, or some other retailer, there are so few who are qualified to install and repair the sets that the service is not adequate and consequently there is dissatisfaction. We have the men who know radio in every detail, who are qualified to install and repair the sets, replace disabled parts and in fact diagnose any phase of it," said Mr. Neil.

### Sells and Installs

This station sells the sets installs them and maintains a parts department wherein can be found any minute part needed for the maintenance of a standard make radio set. From all indications this department will prove one of the most popular in their transportation store.

By going in extensively for radio this firm hopes to enjoy lively selling the year round, for during winter they plan to stress radio and will depend on this line to maintain an increased volume of sales, which should result in the business being normal throughout the 12 months of the year.

Although a good sized stock of tires is maintained by the company, it is not the intention of the brothers to go into this phase of the business on an elaborate scale. The firm does not as yet give road service on tires. "I believe tires are essential to a successful transportation store" Mr. Neil declared.

Battery sales compared to the number of recharges at the Neil station vary, of course, and are governed largely by local conditions. Ordinarily this station sells one battery to every 18 or 20 recharges, but observation recently during a period when the store was conducting a special on one of their own make batteries,

disclosed sales were one to every three recharges, which is believed to be remarkable considering the size of the town in which the station is located. At this time the Neil company made a special price on this battery and through the medium of its newspaper advertising successfully merchandised the product.

Activities of the Neil Brothers Co. are not confined to greater Canton, but extend over six adjacent counties, where service stations are maintained and Neil Brothers products are sold on exactly the same merchandising policy as at the central station in Canton. At these stations, as in the Canton shop, the battery and electrical as well as the speedometer service is rendered.

In their new building Neil Brothers have endeavored to install the very latest in machinery, this being especially true of the testing apparatus. Upon completion of every job left at the station, it is carefully inspected and then given a final test.

There are few filling stations in eastern Ohio that can compare with the Neil Bros. station. It is so arranged that no congestion will result when a half dozen or more cars are at the station for service. The many gas pumps and oil tanks make possible quick service, and scores of cars can be accommodated in minimum time. The same is true of the air, water and lubrication, none of these features conflict with other departments and every attendant goes at his work systematically, and satisfied patrons are the result.

### Accessories on Large Scale

Accessories are merchandised by the Neil company on a large scale and many of the best known make of car extras are to be found within the store. The concern stresses accessories in its window display and also in interior showcases, which have been so arranged that when a motorist drives into the station

a window display of accessories attracts his attention.

That a predetermined charge, or flat rate system of quoting prices to customers, is an attractive proposition from the car owner's viewpoint seems a basically sound deduction when the progress of the Neil Brothers Co. is considered.

The Neil Brothers claim that the average customer is educated to a point where he is interested chiefly in what a thing is to cost. Given the choice of two courses the customer will usually take the one which seems the more clearly defined.

"Tell the customer a job will cost him a definite amount, with additional costs for parts, and he will decide what he will do immediately," the brothers aver, "but if both the price of repairs and the cost of the new parts are left open, then the customer invariably hesitates. In fact, he may take the work somewhere else or decide to take a chance and use the equipment in its damaged condition, if possible."

From the beginning the brothers had in mind the ultimate establishment of a flat rate labor charge and so they designed their office and shop record system with this in view. As soon as sufficient experience had been obtained the flat rate charge was fixed. All charges of this character are based upon a minimum of 18 months' observation of each operation. From time to time the average labor costs are checked up with the idea of readjusting the flat rate charge if necessary.

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In order to eliminate waste effort a very simple system has been devised. When a job comes into the shop, either on the car or over the counter, a job ticket is tied to it. The numbered ticket gives all the information and instructions regarding the repairs which the salesman is able to get. The particular workman assigned to the job puts his time upon the job ticket. If he needs repair parts he presents the ticket to the stock clerk who fills in the list of parts furnished and the list price. When the job is finished and tested the workmen affixes his signature and turns the card into the office, tearing it along a per-



Night view of the Neil transportation store, showing brilliant illumination which attracts the passing motorist

forated line so as to leave a stub with the job number attached to the equipment. The card eventually is filed alphabetically according to the name of the customer and forms a permanent record.

When the card reaches the office the customer is notified if it has been so arranged by the salesman and he calls for the unit, presenting his numbered claim check which was orginally a part of the job card. By this time the cashier has figured the labor and parts costs and the bill is ready.

In the case of flat rate labor charges the labor item is placed on the card originally by the salesman and in footing up the total costs the cashier uses this figure instead of the individual time charges.

As far as the workman is concerned all jobs are treated in the same way so that the job card also is a labor time card for the individual job regardless of the flat rate charge.

At the end of the day, all of the job cards total up the gross productive labor of the repair shop force. Taken as a unit these cards give full details of all the productive labor turned out from the shop, as well as a detailed account of parts taken from the stockroom.

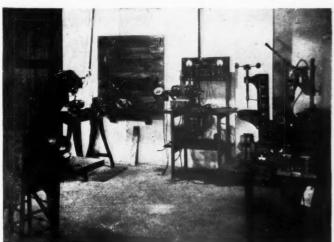
Neil Brothers claim there are three factors necessary in the success of the flat rate charge: Efficient and dependable workmen, proper and accurate test and repair equipment; and finally, a simple but complete record system. Without

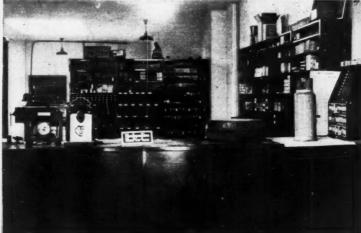
such a combination it would be virtually impossible to establish any reasonable flat rate system, they say.

The Neil Brothers Electric Company was started in the winter of 1919 by the brothers William and Dave. Their capital consisted of \$1000 borrowed upon personal notes as they were not in a position to finance an elaborate business. At first the brothers rented a corner room from an established battery concern David put in his time in the shop attending to the automotive electrical end only while his brother followed his trade in one of the steel mills. The agreement with the proprieter of the battery shop was that the Neil Brothers were to assume all the responsibility for all electrical jobs and co-operate in bringing battery work into the shop for the other concern.

Within a year the battery man who leased them the corner decided to raise the rent. The two brothers then decided to find a new location and enter the battery business.

They moved then to a new shop at Walnut avenue and took out the agency for the U. S. L. battery. As the business continued and the old indebtedness became a memory, the boys took on various equipment lines. At the end of slightly more than two years, the two brothers gave out the contract for their own building, a modern brick affair designed purely for the automotive electrical and battery business.





Corner of the work shop of the Neil Brothers service station, showing testing machinery, newly installed lathe and workbenches, and a view of the accessory and retail store, showing modern metal shelving and filing cases

# That Garage in Town of 500-

IN the Sept. 18 issue of MOTOR AGE we published a call for helpful suggestions on a practical business problem. A subscriber had written us stating that he was contemplating the purchase of a garage (repair shop) in a town of 500 population 12 miles from a city of 160,000. The questions he wanted answered were:

1. Would the nearness to the large city be a drawback to the business:

2. What would be the approximate volume of business that he might expect from the 175 to 225 cars in the immediate vicinity?

3. What in general are the possibilities for the development of a profitable automotive business in such a location, servicing all makes

On the following pages are published two illuminating discussions of this problem by Motor Age sub-



### Nearness to Large City an Asset-Clean, Honestly Managed Shop Will Pay

(A letter to the Editor of MOTOR AGE.)

HE following article is submitted after much experience in the automobile business from all sides. The contact with dealers and repair stations.

In general the man in question should have no fear of any of the points mentioned. He has a chance to make money in the location mentioned unless there is some unforeseen reason not stated in the article as published.

The nearness of the large city is not a drawback. It is a distinct asset. Owners will not go to the larger places for repairs when they have an efficient station at home. On the other hand, owners from the larger city will drive to smaller

places for their repairs in many cases. The "small town" repair man can give his customers "personal attention" that is simply impossible for the larger and more systematized service station.

Personal Contact Important

Owners as a rule do not appreciate the "volume" treatment received at the larger shops when it is possible to be taken care of by a man they know. They do appreciate knowing that their car will receive the attention of that particular man.

The so-called "outlaw repair stations" are so named simply because they are able to do business in a better way on less investment with a much less overhead than the repair stations maintained by the average dealer in the high rent districts of the larger cities. They can do the same work at less cost per hour and still make a much better return on their investment.

There is a possibility for this man to develop a city trade that the city repair stations cannot take away from him. Personal contact is worth more than all the advertising on

A fortune can never be realized from a repair station in a town of 500 people. A mighty good return on a light investment is possible and depends directly on the quality of work turned out and the personal attention given each and every job that is brought to that shop.

With but 12 miles between this location and the larger city a call and delivery service could be had. Some of the city people could hardly be expected to drive this distance and wait for their car to be repaired. They would be glad to have their car called for and delivered.

What a wonderful chance this man has for complete overhaul Where the price runs to fairly large figure he could save the owner a good percentage and that is what strikes right at the heart of every owner of any class motor car.

There is no reliable way to figure the possible volume of business. A good man could undoubtedly do \$10,000 to \$15,000 gross business in the near future. Another manager might do but \$5,000. That depends on the man, the amount of hard work

HOVE THE PART CALL AND DELIVERY

(Continued on Page 20)

## 12 Miles From a Large City

Success Will Come if Garage Is Made a Complete, Carefully Managed Transportation Store, Says Writer

(A letter to the Editor of MOTOR AGE.)

THE location of this garage 12 miles from a city of 160,000 population would not of this fact alone be considered of any great disadvantage. If maintenance work should be accepted just as offered by the average motorist, and about 99 66/100 per cent are pure average, then this little garage would not be able to operate successfully.

Of the 200 cars in its vicinity probably one-fourth, or 50 cars, would seek the local garage for their parts replacement requirements and \$10 per year would cover that for each car, on which a total net profit from the sales amounting to approximately \$125 might be had.

Some of the remaining local cars would occasionally, through urgency of need, patronize the little garage owner for their emergency requirements, which, if an extraordinary effort were made to accommodate them, might be made to quite equal the business received from the other 50 owners, bringing the total net profits from sale of parts to about \$250 a year.

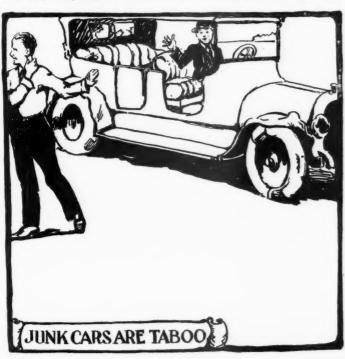
The sales from spark plugs, gaskets, polish, patches, paints for retouching, washers, radiator hose, cotter pins, and lamp bulbs would only be sufficient to pay for handling unless an organized uniform and regular effort were made to intelligently push their sale.

### Organized Sales Effort Necessary

The sale of tires and tubes with a good service for mounting and air could possibly be built up for one of the lower priced tires. The stock should be kept securely and held down to minimum as the hazard from theft at night is great in unprotected districts.

The sale of good oil and cup grease and meritorious preparations for gas, with greasing and oiling rack service built on approved plans, easy to approach, could be made profitable in proportion only to the attention given. The possibilities for the little garage location would be good. A supply of grease and oil cups and facilities for changing obsolete systems to the later and better grease cups could also be made to yield a fair profit.

Guard religiously against adding any accessories to the stock that are fads or only look good, or for which no demands have been regularly had from the trade. "Be not the first by whom



the new is tried." Let the big established garages with the wide trade averages do the introducing. There have been more useless things offered as automobile accessories than would patch hell a mile. Know your trade well enough to buy only for their immediate requirements so that a quick turnover can



be made and your bills paid promptly and exact like payment of your customers.

There are warehouses full of obsolete automobile accessories. Keep out.

### Solicit Brake Lining Jobs

The little garage owner should have a connection with a city brake lining service and the work of relining brakes should be done by appointment, keeping a look-out for these jobs when adjusting brakes, which should be made a special feature for every car that comes in. Encourage owners to have brake adjustments. Right now everybody is thinking and talking brakes. Learn all about the old brakes on every customer's car—it will be amazing to the owner how wonderful his old bus performs since you have got the right adjustment on his brakes.

Equip for oiling springs. A regular job usually costs the owner \$4. It can be done with proper equipment in three minutes for 15 cents for which the owner gladly pays a half dollar and comes around often to have his springs lubricated, which keeps out the squeak.

Junk jobs are taboo. Don't take in any junk jobs that might monopolize the shop, there is never any profit to be made working for a customer on a junk job, that is, a car that has become obsolete or otherwise worn out. A car that needs work-on-it-all-over is never a profitable job for the little garage owner. The owner is a bad owner and even should he pay his bill, he usually goes away sore and influences your prospects against you.

It is the customer who comes often and wants his car kept in good operating shape, who comes every time he needs even some little thing, who is an asset to the business of the little

(Continued on Page 20)

### Nearness of Large City Asset to Garage

(Continued from page 18)

he is willing to put on the proposition and the quality of work turned out of the shop. The past records of this shop and the general make up of the past manager will give a good basis on which this point can be determined.

The most important item is the price to be paid for the business. A mighty close and conservative inventory is necessary. Good will in a large business is worth money. To a small concern it is worth almost nothing. Every one in that town would know of the change of managership and would put the new comer on the same basis as a new man in business. It would be up to him to prove his ability as a repair man. Consequently the reputation of the out-going concern, if good, would be worth but very little.

As to possibilities. There is undoubtedly no new car agencies in that town. The dealers of the close by larger city need business every minute. This repair man can establish a position as advisor to his customers that is far more effective than any sales effort the sales organization can produce. If he tells his customers the TRUTH about their present car and shows them he is interested in their car they will take his advice on a new car more than any salesman. That means this repair man can assist the proper dealer in the larger city for which he should be paid, and paid liberally.

### Work Full Time on Used Cars

He will have the opportunity of keeping his shop working full time on used cars. He can purchase used cars for cash from the city dealers at his own price for they need the money and need it bad. He should be a good judge of used cars and can pick up the good ones, repairing them on his spare time and turning them to people he knows at a fair rate of profit.

Let him beware of a new car agency. He will find his money tied up in cars with mighty little operating capital just as the majority of dealers are today regardless of the size or location of the city in which they are located.

When the new car dealers are finding it possible to make more net profit from repairs and supplies than they can from the sale of new cars why is there any logical reason why this man cannot make money in the location mentioned. When the Ford Motor Co. find it profitable to establish parts of their factory in towns as small as the one where there are only 14 houses due to the reduction of overhead why is it impossible for this man to do the same thing?

New car dealers are charging unreasonable prices for service trying to make up for the loss on new and used car sales. This man has the chance for profit without the contingent liability of a new car sales department.





He should plan on but very little, if any, profit from the sale of gasoline. The profit is so short there is very little chance of net profit. Also there is such a loss due to evaporation. He should have a filling station as an attraction for owners to come to his place of business. The sale of oils will show a little profit.

### Buy Parts One at a Time

Under present conditions it is possible to be considered as an official service station for some of the cheaper cars. This is fine providing he is not forced to stock parts to the extent that his investment is too heavy. It is better to buy the parts one at a time at list price than to stock a large number of parts just to satisfy a factory policy.

The extent of success possible in this case is due to the amount of honesty, hard work and personal attention given the business. If the man is a mechanic himself, not afraid of work and pleasant to his customers he can make more money in the small location than a big percentage of the largest dealers we have are realizing in the larger centers.

Right now is the time to start in the motor car business from a repair standpoint. The rate at which the factories are losing dealers is forcing them to not only admit that something must be done but they are gradually changing their policies so that the dealers and repair men have a chance to make money.

There is no doubt but that the small repair man that has a steady following of customers is causing the larger dealer a lot of worry. They consider them outcast, etc., but still the small man gets the business. He can make more money at \$1.00 per hour than the big fellow can at \$1.25, or in some cases \$1.50 and turn out work that is equal and in many cases better than the big fellow. His labor costs him less. Overhead, the medium that is wrecking thousands of them, is almost nothing. Confidence is his beg asset and the amount of it he establishes is up to him.

He can establish flat rate or not. Flat rate is simply a forced system. Forced upon the repair stations because the public does not have confidence in them.

A clean, well kept. HONESTLY MANAGED repair station in the mentioned location will pay.

G. H. F.

### Make Garage Transportation Store

(Continued from Page 19)

garage owner. His car always runs well and is a lasting advertisement for the place that furnishes the service.

Make a reasonable and proper charge for every service performed, even if it is small. The customer would rather and expects to pay it. It is said that the hotel concession of hat privilege at the dining room door is cold at a high figure, re(Continued on page 37)

## An Ingenious Engine Tester

Device Provides Convenient Means of Shorting Out Any Number of Spark Plugs So Engine May Be Run on One or Two Cylinders

In testing an engine to locate a broken spark plug or a cylinder which is not firing the mechanic often finds that he does not have enough hands to hold three or four screw drivers. The old screw driver method of shorting out a cylinder at a time is, of course, a step in the right direction, but it is difficult to make a thorough test in this manner and it does not impress the customer as a businesslike procedure.

The Pittman motor tester is a piece of service station equipment designed to expedite engine testing. In the first place, it makes it possible by merely depressing the keys to short out any number of cylinders, while at the same time the use of an instrument of this sort will make an appeal to the customer who likes to have his car taken care of in an up-to-date shop.

Essentially it incorporates a ground wire and eight other wires which are connected to the various spark plugs. The keys which are conveniently operated serve to connect the ground wire to any number of the other wires, while spark gaps are also incorporated in the device.

### Testing for Leaking Valves or Rings

If there are no leaks in compression and cylinder under test is firing properly engine will slow down but continue to run being driven by cylinder under test. Cylinders having leaky valves or rings will slow down much more than those having no leaks and if leaks are very bad engine will stop unless switches are released allowing other cylinders to fire and prevent engine from stopping. If intake valves are leaking cylinder will misfire due to burned gas leaking back into manifold. If exhaust valves or rings are leaking badly engine will slow down to a stop without cylinder misfiring. To determine if leaks are in valves or rings allow cylinder to run engine with wide open throttle and observe breather pipe. If pistons are leaking an unusual amount of smoke will issue from breather pipe. To be sure this test is correct a piece of pipe or rubber hose can be placed over breather pipe and ear placed at other end of pipe or hose and the leak can be distinctly heard.

To prevent undue racing of engine while leaving tester to open throttle and to make other test all but one or two of switches should be latched in closed position with latches provided for this purpose. Also this will be found convenient where breather pipes are on opposite side from tester.

### To Test Spark Plug

If a cylinder shows to be firing intermittently or misfiring entirely test plug and spark circuit. To test plug depress switch to nearly closed position or until narrowed gap is formed between electrode and end of switch blade. If plug is

all right and spark is being delivered to plug a spark will jump the gap in tester as the narrowest gap in tester is twenty-five thousandths of an inch and spark plug gap should be about the same it is obvious that the spark will go the easiest way to ground which is through tester gap, because the spark gap is under compression and this makes the resistance much higher in spark plug gap than in tester gap.

If plug porcelain is cracked or covered with carbon or points too close together the spark will find it much easier to get through the plug than to jump the twenty-five thousandths of an inch gap in tester and no spark will appear in tester gap, thus indicating a defective plug.

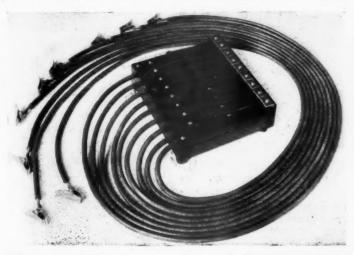
### When Spark Gap Is Too Wide

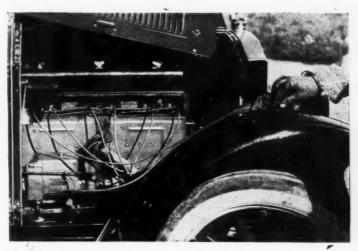
If spark appears in tester when adjusted to about one-eighthinch this would indicate that spark plug gap is too wide, the spark finding it easier to jump the wide gap in tester than to jump the wide gap in plug because compression increases resistance in plug gap causing the spark to jump the wide gap in tester.

### Finding a Knock

To locate misfire and knocks which occur when engine is under heavy pull or high speed with tester connected to plug open throttle wide and close all switches until engine nearly stops then release number one switch; this will allow number one cylinder to fire under same conditions as when engine is on slow hard pull in sand or mud or steep hill, thus operation of cylinder can be noted. Test all other cylinders the same way. If a cylinder shows an occasional misfire to determine if it is caused by spark plug or by interruption in spark disconnect spark wire from plug and connect clip to wire adjusting spark gap in tester to about one-eighth of an inch and observe spark jump this gap. If there is any interruption of sparks in gap this can be readily seen and heard, even if only one spark fails to jump gap it will be easily noticed. If the flow of sparks is continuous the trouble will be found in spark plugs. If interruption in flow of sparks is shown trouble may be in breaker points or insulation of distributor cap or plug wires. If gap in tester is increased to one-fourth of an inch and insulation is bad spark will fail to jump gap in tester. If spark continues to jump one-fourth inch gap same as it did one-eighth gap the occasional failure of spark is due to breaker cam or points.

The Pittman motor tester is made by the American Motor Tester Company, Box 173, Amarillo, Texas.





The tester with connecting wires and clips. The clever mechanic will find a number of ways of locating misses and knocks by the results of running on various cylinder combinations

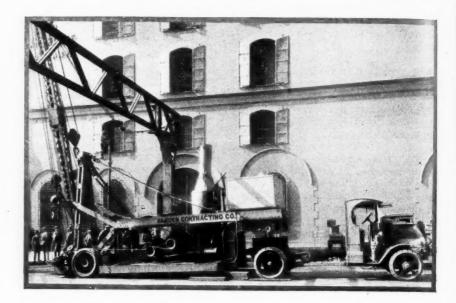
## MOTOR AGE'S PICTURE PAGES

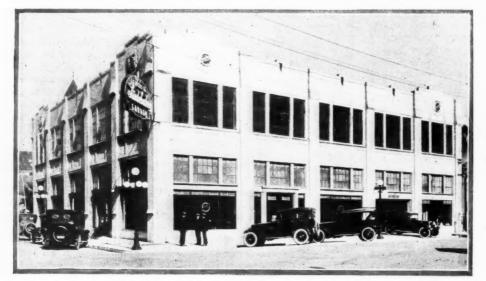


The "biggest piston pin in the world" measures 4x 12 ft. It is made by the Burgess-Norton Mfg. Co., Geneva, Ill., takes an 8-in. set screw and oil hole 4 in. in diameter, and if constructed of real steel we hate to think what would happen to this truck.

It was entered in a parade.

An ingenious wrecking device, a feature of which is that all the mechanism, including the engine, drums and boom, is assembled into one compact, portable unit. It has been used on construction and wrecking jobs in the vicinity of New York for 12 years







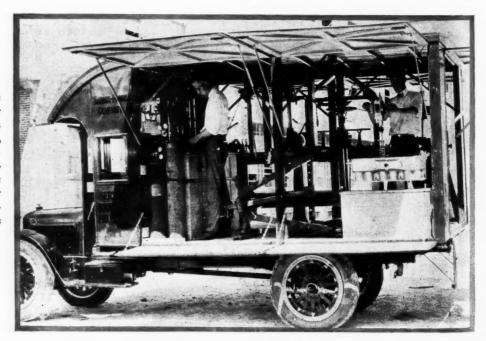
This is the home of one of the most successful automotive organizations in California. It houses the L. S. Weeks Co., Studebaker dealers at Stockton. Looks like a live salesman had stopped two prospects at the corner



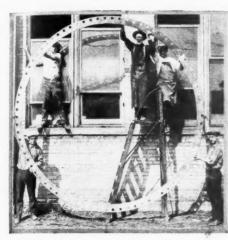


A demonstration of shop equipment was carried to the service stations of Texas by this field truck of the Straus-Frank Co., San Antonio, jobbers. The truck, a Federal, carried presses, jacks, electric drills, grinders, hones and other products of such manufacturers as Weaver, Manley and Black & Decker. This truck was well received by service stations and garagemen who welcomed the opportunity to see the various tools in operation

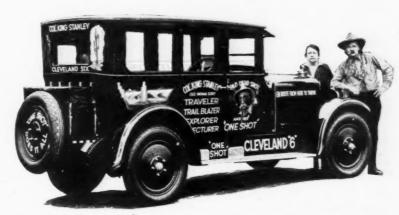




### OF AUTOMOTIVE INTEREST



This copper asbestos gasket, 12 ft. in diameter, established a world's record in the building of gaskets. It was built by the McCord Radiator & Mfg. Co., Detroit, for the Ford Motor Co. and is to be used on a 30,000-hp. Turbo-generator in the Rouge plant of the Ford company



Col. King Stanley, veteran Indian scout and trail blazer, who is said to have traveled more miles by motor than any other living man, has selected a Cleveland Sedan to continue his wanderings





One result of the growing demand for automotive products in Sweden is shown in the handsome home of Robo, Inc., the Bosch agent in Stockholm. It is in the heart of the Swedish capital's "Automobile Row"









"Brownie," well-known automobile editor of the Milwaukee Journal, drove this Nash four-door coupe 10,091 miles in 32 days exploring the state highway systems of Wisconsin. He spent only \$7.40 for repairs, which were made on a loose bearing



# The READERS CLEARING HOUSE

# Questions & Answers on Dealers Problems

### A Deep Legal Tangle

Q.—I have been a reader of Moror Age for quite a while and would not be without it for ten times the price of it. The information I get from it is worth a great deal. I would like to know what to do in a case like this. A takes a motorcycle to B for repairs and overhauling. B says he will overhaul it as soon as he gets time. A calls on B to see if he has it done at two different times in about four months' time. A calls on B third time to see if it is done and B says, "Why, I sold the machine to a junk man." The machine was only two years old and only needed overhauling and generator fixed. A had \$104.00 in it, B would not do anything toward settlement of any kind. What steps should A take against B for such act?—J. F. Lorenz, Wesley, Iowa.

A should bring action in court for conversion of the motorcycle against B. In a matter of this kind this remedy has some advantage over suing on contract for breach thereof. Where B promised he would repair as soon as he had time, the law will require that he repair within a reasonable time under all the circumstances of the case.

Q.—What can I do in a case like this? A signs a dealer's contract, deposits \$100 with B and C as partners and distributors of car. A had two prospects for five-passenger cars, which B and C would not furnish as they wanted to sell them themselves, but B and C says that if A wanted a five-passenger car he would have to go to the factory at Detroit and drive one back. A hired a man to go with B and C to factory with a check for \$500.00 as part payment on five-passenger car and when car was in A's home a balance of the amount of car was to be mailed to B and C, which was O.K.'d by B and C, but when A's man got to the factory, B and C made A's man take a large seven-passenger car, a one that B and C did not want, as they were hard to sell. A payed out \$122.00 to get the seven-passenger car home. A calls up B and C and says that is not the car he wanted but B and C say it will be all right and that they will send out a salesman to A and sell the seven-passenger car. Salesman spent two days with A and could not make a sale. B came over to A about a month after B and C's salesman left and spent two days trying to dispose of the car, which he failed to sell. A, of course, furnished gas and oil and four days' time trying to sell this car. B went home about two weeks after and C came to A and presented a slip of paper, saying it was a sort of bill of sale with the top of the paper turned back where it said chattel mortgage, which A did not see at the time. A signed it. A also signed a note for the balance on the car. C guaranteed to A he will dispose of the car for A before the note comes due. About three months later B came and took the car away while A was not at home. Now A has \$100.00 deposited on contract, \$500.00 on a car which he hasn't got, \$122.00 expenses for bringing the car home, no car and B and C shortly after dissolved partnership and neither one wants to refund any money. What can I do?—J. F. Lorenz, Wesley, Iowa.

B and C as partners, are still responsible for any just claims of A, regardless

The Readers' Clearing House

THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

All questions are answered direct by letter, so the name and address should be given in full. This saves waiting for the answer to be published, which sometimes occurs several weeks late, depending upon the space available.

Readers' names will not be published with articles, if a request to this effect is received with the letter.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

of dissolution of partnership. Apparently A makes out a case of fraud and deceit against B and C, especially as to the signing of the note and mortgage. Generally one who signs a contract is not permitted to deny its contents, nor that it represents the agreement between the parties. And the provisions of the written instrument determine what it is, regardless of what it is called by the party presenting it or what the heading terms it. But if A can establish the case as presented by evidence he should recover all the cash he is out and other damages from either B or C or both.

### STEPHENS VALVE TIMING

Q.—I would like to know the valvetiming specifications for a 1921 Stephens touring car. Please mail this to me as soon as possible. Mr. Harry Kilts, care Willard Auto Company, Green Bay Wisconsin.

The timing on the 1920 Stephens engine which to all appearances is similar to the 1921 engine is as follows: Intake valve opens 5 degrees after upper dead center, exhaust valve closes twelve degrees after upper dead center. It will be seen that the intake has a lead of seven degrees over the closing of the exhaust.

# H. P., Displacement, Compression Ratio and Valve Design

Q.—How is the S. A. E. rating of an engine figured?

The S. A. E. horse power is determined by taking the bore of the cylinder and multiplying it by itself, then multiplying by the number of cylinders and dividing by 2.5.

Q.—How is the cubic inch piston displacement figured?

The area of the top of the piston is figured by multiplying the diameter by itself and then multiplying by .7854. This area is then multiplied by the length of the stroke to give the displacement of one cylinder. This quantity is then multiplied by the number of cylinders to get the total displacement.

Q.—How is compression ratio determined?

The compression ratio is determined by dividing the number of cubic inches in the combustion chamber when the piston is down by the number of cubic inches in the combustion chamber when the piston is up. A method of measuring this was shown on page 35 of the June 19th, 1924 issue of Motor Age.

Q.—How are the sizes of valves determined when designing an engine?—California Mechanic.

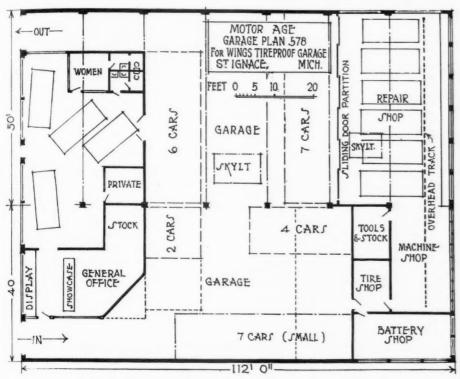
We are giving information on this question from volume one of the Gasoline Motor by P. M. Heldt of Nyack, New York. Mr. Heldt states that the smallest diameter of the taper of an ordinary poppet valve should be the same as the port diameter. He then states that the outside diameter of the head should be 1.15 times the smaller diameter. The thickness at the center of the head should be .15d. He gives the valve stem diameter as .15d plus .15 in. He gives the radius of fillet at the junction of head and stem as .2d. For further information would suggest your reading the volume in question which can be either purchased or obtained at any public library.

### OILING OF STEPHENS ENGINE

Q.—Explain oiling system on latest Stephens Salient Six.—Banker & Donohue. Inc., Boston, Mass.

A.—A gear type oil pump sends oil through the main bearings, connecting rod bearings, camshaft bearings, and by means of a tube in the connecting rod. lubricates the piston pins. A check valve limits the flow of oil and a by-pass supplies oil to the timing gears. A connection is made to the intake manifold in such a way that as the load on the engine increases, the check valve is controlled for the purpose of reducing the amount of oil by-passed to the timing gears, thereby increasing the flow to the bearings.

### 50 Foot Addition to a 40 Ft. Building



Increased width allows drive-in and drive-out doorways

Q.—I have been interested in Motor Age for years and would like very much to take advantage of your architectural service, as we intend to build an addition to our present building. You will note by our diagram that we have no entrance other than main street, which makes our planning quite difficult. We would like your plans or suggestions as soon as possible as we intend to build at once.—C. B. Wing, Wing's Fireproof Garage, St. Ignace, Mich.

We have made our layout substantially as you have it in your sketch, the main difference being in the showroom, where we removed the women's waiting room and the private office from the front window, leaving this space open to show The shop is also somewhat changed, the entire new section being used for repair shop, while the old section has the machine shop, tool and stockroom, tire shop and battery shop. The machine shop, while being a machine shop is also large enough to overhaul engines and axles and to facilitate this and overhead track is run along the front of the car spaces and into the shop.

The office is arranged with the accessory showcase forming its front boundry, this makes it easy for the office help to take care of accessory customers and conserves space as well.

Separating the repair shop from the garage is a series of folding doors, which can be arranged to keep out the cold air and allow the shop to be kept at a higher temperature in the winter than is necessary in the garage.

In your latitude this is quite important, coal being high and the winters long and cold. While the shop should be kept at 65 to 70 degrees, the garage need not be more than 45 degrees.

We would prefer storing cars crosswise as shown in the new section, this arrangement giving aisles that are more regular. It would be a good plan to remove the entire wall between the two buildings and to replace it by posts. We do not know how the roof of the old building is supported, but have suggested trusses placed 16 feet apart on centers for the new roof and if this does not correspond with the old trusses, beams could be arranged on the posts to carry their ends.

We would not advise installing windows on the side of the building, next to the wooden building. One or two well arranged skylights would be much better. A skylight or two would also be advisable over the shop.

### This Motorcycle Will Get Run Down "If It Don't Watch Out"

Q.—We are having trouble with a Harley-Davidson motorcycle, about 1914 model, 2 speed. We overhauled this motor recently, putting in a used front cylinder block with piston, rings and wrist pins. We also put new wrist pin in the rear piston and installed new bearings on connecting rods, also new bearings on the gear side main bearings and put in a complete set of valve springs. The motor is free and does not bind. Compression is good and valves and magneto are correctly timed, according to factory service bulletin. Spark is good and different carbureter adjustment does not seem to help and while the engine has plenty of power the motorcycle will not do more than 35 miles per hour.—George Braum, Campbellsport, Wis.

In putting in the old parts, we wonder if you checked them up to see if the wear was such as to cause too much clearance. We understand that the cylinders are bored tapered, so that the top has a diameter which is .005 in. less than the bottom. On an engine this old the wear would probably be such that the condition would be reversed. Then for a good job it would really require having the cylinders reground, and this is a condition that you might check with inside micrometers or with a piston and a thickness gauge. At the top of the cylinder the clearance should be .003 in. between the skirt and the cylinder bore. It is also possible that in using the old piston rings you are losing compression even if you think it is all right. This engine should be rather difficult to crank and unless one is rather strong necessitates relieving the compression by means of one of the handle bar controls. If you do not have to do this and find that it cranks without much difficulty it is possible that the compression is not very good even if it seems satisfactory. Another possible cause of trouble would be in improper timing of the mechanical release valve. As you say you have factory instruction you can refer to this portion of the instruction book. This release valve is designed to relieve the crankcase compression when the piston moves downward and when the pistons rise in the cylinders this release valve closes so as to create a partial vacuum in the crankcase and draw oil vapor in so as to lubricate the moving parts. Failure to get high speed from the motorcycle often indicates spark which is not advanced enough and we would suggest you again checking this carefully. It is also possible that the carbureter, if it is the original one that came with the motorcycle in 1914, is so worn that it needs replacing or rebuilding and it might be well to take this matter up with the Harley-Davidson factory.

### Architectural Service

In giving architectural advice, MOTOR AGE aims to assist its readers in their problems of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an fitelligent handling of the job. Among other things, we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

What departments are to be operated and how large it is expected to be.

Number of cars on the sales floor.

Number of cars on the sales floor. Number of cars it is expected to garage. Number of men employed in repair shop.

How much of an accessory department is anticipated.

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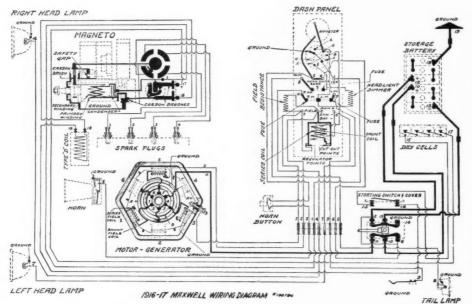
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### What the Old Switch Does on a Maxwell



Q.—Send wiring diagram of 1915 Maxwell, if possible. This car has a sevenvolt generator and twelve-volt battery with four leads and magneto ignition. The owner has installed a Dodge rear axle and an Oakland front axle and the car runs like a scared cat. At some time or other, the wires have been crossed and when the starter switch is operated, there is a short in the switch and the starter will not turn over.—R. C. Zimmermann, Seattle, Wash.

A.—Wiring diagram is shown in accordance with your request. It would be

well to test the starting switch to see that there are no grounds except the intentional ground at terminal 14. This grounds terminal 13, which is the other negative battery terminal when the car is running and the machine is generating. When the starter is operated, this ground connection should be broken, 12 and 13 should be connected while terminals 10 and 11 should also be connected by the action of the switch.

### Suspect It's Preignition

Q.—We have a Chalmers 6-cylinder 1918 car which has been rebored and Kant Skore pistons .0035 in. oversize fitted. It has run about 5,000 miles since being rebored and just recently developed a knock when pulling hills or when the throttle is opened wide on the level. This is a sharp knock, just like a carbon knock. We cleaned out carbon and ground the valves and it seemed to work worse after that. The power is also affected as it does not climb hills as it should and we have had a number of four-cylinder cars pass us up on the hills. When it starts to knock, it seems to work against itself and slows down. If the throttle is opened gradually on the level, it will run any speed up to fifty miles per hour without any knock at all. Tell us what is wrong, if possible, and give instructions for adjusting the carbureter.—Prairie Subscriber.

It occurs to us that possibly a spark plug has been changed and one installed which has a petticoat type insulator or extra long electrodes. Projections of this character in the cylinder are likely to get red hot and cause preignition which would act as you describe. We would suggest your trying benzol as fuel or a mixture of benzol and gasoline or ethyl gasoline, as well as checking the spark plugs. You might also check the ignition timing to see that the spark occurs at about the dead center position when the lever is retarded. The carbureter adjustment is as follows and it may be that too lean a setting has a

tendency to cause the trouble you describe:

With motor not running. Fully advance the throttle (A). Set choke valve on dash at extreme lean position. Verify by putting finger in butterfly valve in the air horn to see that the butterfly valve is fully open (B).

With choke valve in lean position and the economizer adjustment at extreme right, as shown (C), turn high speed adjusting screw (D) to the left until there is a small amount of play in the economizer lever at (E). Turn high speed adjusting screw (D) to the right until this play is just taken up or the lever cannot be moved without raising the needle valve. Continue to turn the high speed adjusting screw two (2) complete turns to the right and one (1) notch.

A notch is considered the click of the locking plate (F) in the depressions in the high speed adjusting screw.

Turn the economizer adjustment (C) to the left so that there will be approximately 1/64 in. clearance between the high speed sleeve and the economizer nut at (H). This clearance can be measured with an ordinary business card.

This is the approximate high speed adjustment.

Turn the low speed adjusting screw (G) to the right until it seats.

Then open by turning to the left one (1) complete turn.

This is the approximate low speed adjustment.

Start the motor and let it get thoroughly warmed up. The proper warmth can be determined by the radiator becoming warm all over. It will take about fifteen to twenty minutes, running with retarded spark at about 700 revolutions of the motor. With fully retarded spark and throttle levers, motor idling at low speed, adjust the low speed screw in or out so that the motor runs evenly without skipping and gives off a distinct hissing sound. If the motor does not run slow enough, back out, on the stop-screw (I) until the speed desired is obtained. Readjust the low speed adjustment so the motor hits evenly.

The motor must be thoroughly warmed up before this final low speed adjustment is made.

With spark still retarded, open the throttle quickly. If the motor spits back through the carbureter, adjust the high speed screw (D) one (1) notch to the right until the motor does not spit back.

If the motor does not spit back with the approximate adjustment, adjust the high speed screw (D) to the left until it does spit back when the throttle is opened quickly.

### Dangers of Partnership

Q.—What would be a fair percentage of the profits for each partner to draw? What are the advantages and the disadvantages to incorporating? Could you give me the names of any books or places where I could get more information about the garage business?—A Reader.

Ordinarily it is said that in business capital takes control. What would be a fair percentage would depend on many circumstances. Very often a man will put up his money against the skill and experience of another and the two divide the profits equally. But partnership is a matter of contract, and if no provision is made as to a division of profits the partners will share equally. Sharing of profits is a pleasant thing ordinarily, but sharing the losses is a different matter.

However, as far as creditors are concerned each partner is responsible for the whole debts and obligations incurred by the partnership. Now the corporate form of organization has the advantages of limiting one's personal liability to the assets of the corporation. In a partnership one's whole individual fortune may be lost, but bankruptcy only reaches the assets in the business.

A partnership is dissolved upon death or resignation of a partner; not so with the corporation. It lives regardless of the lives of its officers and stockholders, etc., etc. The corporation is an individual in law and may sue and be sued; not so with the partnership.

### Simplified Wiring for 1913 Cadillac

Q.—Supply wiring diagram of 1913 Cadillac giving timing and adjustment of ignition relay. We would like to simplify this ignition system changing it to single wire system and if this is possible would like diagram. Would also like to know the wiring for the generator, as we do not intend to use the starter circuit.

We would recommend your discarding the ignition relay and using only the distributer which has the interrupter and condenser in it. We believe that the other distributer will be found to have a timer in it, where the points close to complete the circuit through the coil and ignition relay. In the interrupter the contacts open to give the spark when piston is on top dead center. The coil of iron wire used between terminals one and two of the generator is for the purpose of limiting the output and you may have to experiment with this to get the right length of wire which will hold the current down to 9 or 10 amperes, which will be ample as long as the starting motor is not being used.

### Studebaker Axle Adjustments

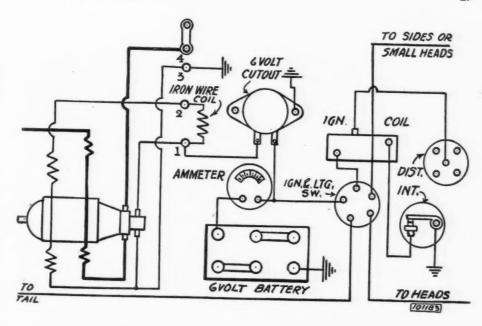
Q.—We are having considerable trouble with back lash in Studebaker Big and Special Sixes in the rear end. This seems to be in the differential case and makes quite a snap when clutch is let in to start from a standstill.—T. W. H., Canada.

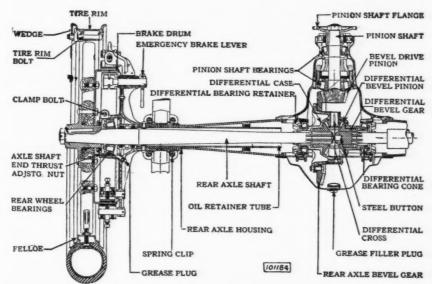
We are showing illustration of the rear axle of these Studebaker cars in question. Removal of unnecessary play between pinion and ring gear in the differential is accomplished much as it is in other axles. The inspection cover is removed, the retaining clamp nuts are loosened and the adjustment is turned to get the necessary relation between ring gear and pinion. If it is desirable to adjust the pinion this may be done by removing the pinion shaft cover and two retaining clamp bolts, lifting out the bearing retainer lock.

A screw driver may then be used to turn both front and rear bearing retainers in the same direction so as to maintain the bearing adjustment while advancing the pinion or withdrawing it from the ring gear. Another possibility is that instead of trouble at the differential you have rear wheels which are not tight on the shaft and it might be advisable to check this condition and perhaps lap the wheels so that they fit well at the taper. The key should also be a good fit in the keyway in both hub and shaft.

### Perhaps a Piston Is Reversed

Q.—We have a 1922 model Buick Six which has a loud sharp knock in it. It is more noticeable on a slight pull at about 10 or 15 m.p.h. Retarding the spark helps a little but very little. My mechanics are unable to locate the cause, although it seems to be about the valves or push rods. We have just had it re-





built mainly on account of the knock, but it did not help it in the least. We had new oversize piston pins fitted also new camshaft, rollers and pins, also had the bearings fitted but it still develops a sharp, loud click at each revolution of the motor.—Ellis E. Couch, Healdton, Okla.

We have recently had a large number of reports of knocks which apparently were due to piston rings, although these reports usually come in after an engine has been overhauled and new pistons and rings fitted. The trouble seems to be in the pressure getting at the upper ring and compressing it so that the ends strike together and make a knocking sound. A remedy for this condition is to file notches in the top of the upper ring or else fit it slightly loose in the groove, so as to allow explosion pressure to get in behind the ring and hold it out against the cylinder wall. We are not sure that this is the trouble in your case for it may be that the piston has too much clearance and that it is merely a case of piston slap. You might check up the clearance by using a thickness gage be-

tween the piston skirt and the cylinder wall. This should be approximately .001 in. clearance for each inch of cylinder diameter, double this amount for light weight alloy pistons and somewhat less for the light weight alloy pistons which are made with split skirt construction. Another possibility is that at some time or other one of the pistons has been put in backwards, for in the Buick car the piston pin is offset. The thick side of the piston should be to the left when viewed from the rear of the engine as would be the case with the mechanic sitting in the driver's seat and looking toward the radiator. The arrow cast into the piston should point toward the camshaft which is on the right side of the engine. The cotterpin should be toward the front of the engine. The clamp bolts on the connecting rod should be on the side of the piston pin away from the camshaft. If the suggestions just given do not solve the problem, you might refer to the list of engine knocks given in the August 14 issue of Motor Age.

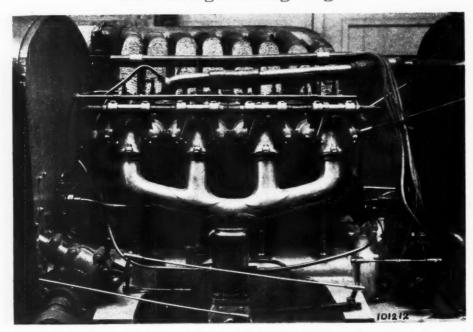
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### 1914 Delage Racing Engine



"A Reader from Indiana" requests a picture of the 1914 Delage racing engine. Here 'tis!

#### CRANKCASE TROUBLE

Q. We have a 1922 Dodge in which the crankcase fills up with gasoline every 200 miles. We have installed new rings, the compression is good and we have also installed new vacuum tank and carbureter, but do not notice any improvement in the operation. What would you suggest? Shurtz & Haynes Garage, Logan, Kansas.

It is possible that the man operating this car drives with the choker in use. It is a peculiarity of the Dodge engine and carbureting system that it is possible to get fair results from the engine as far as power and smoothness are concerned even if the choker is left partly out. For this reason a condition of this kind may not be noted. The choker system on the Dodge car gives very easy starting, but this one point must be watched for the choker must be returned to the running position or excess fuel will be drawn into the engine and will work past the pistons into the crankcase. If raw fuel is getting into the combustion chamber it is practically out of the question to have piston rings which will prevent its working down. Another possibility is that the fuel you are using is rather low grade and does not evaporate readily. To help this condition it might be well to install a hot spot on the car and we would recommend this being done.

### ABOUT A MARMON 34

Q. Am writing in regards to a Marmon 34—1924. Have checked valves and carbureter and found all O.K. It takes time about skipping; 3-4-5 are ones which skip. Would skirt of piston cause this? Bishop's Garage, Landrum, S. C.

Your question is rather indefinite but we gather that the engine is missing on cylinders 3, 4 and 5. You do not say whether you have made any tests or not. As this appears to be a new car we would suggest that it be taken to the authorized Marmon dealer who sold the car. However, if you wish to locate the trouble, we would suggest your at least removing a wire from a spark plug to see whether the sparks are regular or not. You might try reversing spark plugs between a cylinder which fires and one which does not fire regularly. If you will describe the conditions a little more carefully we can probably give some assistance.

#### PROCEDURE WHERE CAR IS HELD FOR REPAIR

Q. Kindly inform procedure in case of automobile held for repair and storage. Owner of car seems not to concern himself about car but holds Pennsylvania Owner's Title.—Ferd. A. Mosebach, Bethlehem, Pa.

Your state does not give you a special lien for repairs by any statute. Therefore, the only lien you can claim is one at the Common Law.

Now this lien is one which gives you only the right to retain possession of the repaired car.

Under these conditions I would advise first that you bring suit for repairs and storage, retaining possession under your lien, then, under the judgment you may proceed to sell the car, applying the proceeds to your claim, after paying the costs. It is necessary for you to retain possession to preserve any preference under lien claim.

### See an Agent

Q.—I have a 1917 Ford that had a peculiar rap or knock. The pistons seemed to be tight but I put in a set of inner rings anyway and tightened the main and connecting rod bearings and replaced the piston pins and bushings that were worn but the rap was still there, so I put in a new set of spiral shaped timing gears, as the ones I took out had the teeth cut straight across.

When I tested it the knock had completely disappeared and there was a whining sound, as if the gears were very tight. I ran the car about 50 miles and the whining sound stopped and the knock came back again. I examined the cambalt and found that there was about one eighth of an inch end play.

I would like to know if helical timing gears would work the camshaft back and forth so it would knock nearly as loud as a loose connecting rod. I notice the knock mostly when I first started in high and after I get to running 25 m.p.h. and up, although it is not noticeable much on a hill.—Indiana Reader.

One-eighth of an inch is too much end play for the camshaft and should be corrected by installing a new camshaft bearing.

The front bearing is the one to replace. It comes in one piece and is cracked in two when being applied to the shaft.

Q.—I would also like to know just how to go about removing a camshaft after the engine is out and mostly apart.

We would suggest that you bring the car to an authorized Ford service station. The removal of the camshaft can be accomplished while the engine is in the frame. It necessitates raising the valves and pushrods, loosening the camshaft bearing locking screws, removing the gearcase cover and pulling out the shaft.

### VOISIN BROUGHAM

Q. What is the wheel base, tire size, engine bore and stroke, number of cylinders, type of four wheel brakes, spring suspension of the European Voisin brougham (10 h. p.)?—James Horton, 609 Park street, Bristol, Va.

The wheel base is 112 in. and tread 51 in. Tire size is 765 by 105 m.m. This tire size is about the equivalent of a 30 in. by 4 in. tire. Engine has 4-cylinders. Bore and stroke are respectively 2.36 in. and 4.33 in. According to the annual statistical issue of Automotive Industries published February 21st, 1924, this car has internal front wheel brakes operated by foot pedal and used as service brakes. It also has internal brakes on the rear wheels operated by the hand lever. Semi-elliptical springs are used both front and rear. Brakes are operated by means of cable.

### HUPMOBILE DATA

Q.—What is the number and make of rear wheel bearings, also front wheel bearings, inside and outside, on a 1917 Hupmobile Model N, serial No. 66063?—Robbins & Robbins, North Main street, Rockford, Ohio.

According to records covering the Hupmobile in this office, the 1917 Model N used Timken bearings in the front wheels, No. 277 and No. 237. The rear wheels were equipped with Gurney radial ball bearings No. 310.

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# BOOSTING ACCESSORY SALES

It is not necessary to have special rims for the use of the Cooper balloon cord, according to the manufacturer, The Cooper Corp., Cincinnati, O., the owner's present wheel and rim equipment being all that is required. The air pressure used in the tires is from 20 to 30 lbs., the objective being to reduce the strain on the tire from within. Each strand of cord is entirely surrounded by rubber,

Cooper balloon cord

is the fact that one type now fits any Ford car. Heretofore, different models were needed for open and closed cars.

In design, the new Hassler departs somewhat from previous Hassler engineering, with the exception that the basic Hassler principles remain unaltered. Probably the biggest development in the new Hassler is the fact that a more perfect control of the rebound has been effected.

It will be noted from the illustration that the new Hassler has been considerably changed in general appearance. The whole design shows a marked tendency toward compactness and unobtrusiveness. This is gained through the design of the new spring members of the shock absorber.

### Federal Fifteen Bumper

The Federal Fifteen Bumper is the latest model added to the bumper line manufactured by the Federal Pressed Steel Co. of Milwaukee. The new bumpers are designed particularly for use on Chevrolet, Ford, Overland and Gray cars. They are furnished in black satin finish or nickel plated. The oil-tempered spring steel bars are anchored at the ends to eliminate vibration and rattle.



Federal Fifteen bumper

which is done to overcome any tendency to heat or chafe. The low pressure is used to obtain a greater cushioning effect thereby allowing the tire to conform more easily to the irregularities of the road. It is claimed that improved braking is obtained because the larger contact grips the road securely when brakes are suddenly applied.

### Hassler Shock Absorber for Fords

Robert H. Hassler, Inc., of Indianapolis, manufacturers of spring control devices for small cars and friction type shock absorbers for large cars, have announced



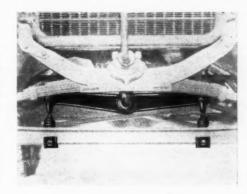
Hassler shock absorber for Fords

the new Hassler Rebound Check and Shock Absorber for Ford cars.

One of the features of the new Hassler

### Milwaukee Auto Buffers

These are a combination of a friction head jolt eliminator with a direct acting spring cushion. The two arms are held against up and down movements by conical friction plates. They are designed to resist but not prevent



Milwaukee auto buffers

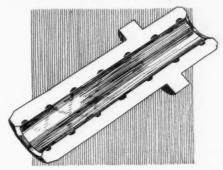
the big movements of the chassis and to ease off the leap-up. The purpose of the two conically coiled springs is to take up the small bumps and jars, while the centrally fastened friction head is for checking side-sway. The springs are

made of high grade steel. The top end of the conical spring is fastened to the arm of the friction head through an oilless swivel connection to let the spring and arm align themselves to every position of the body.

The buffers are designed for all models of Ford cars and the price per set (front and rear) is \$18. They are made by the Milwaukee Shock Absorber Co., 3610 North avenue, Milwaukee, Wis.

#### **Graphited Valve Stem Guides**

In order to afford lubrication to the stems of poppett valves The Standard Automotive Parts Co., Muskegon, Mich., has brought out valve guides impregnated with graphite so that the stems of the valves will be kept in constant lubrication. The manner of retaining the graphite is shown in the sectional view of the guide. These graphited guides are



Sectional view of graphited valve stem guide

made under the same patents it is said, as the oilless bushings which have been on the market for several years. It is stated also that valves working in these guides do not wear on the stems appreciably and hence insure a better seat over a longer period inasmuch as the valve is held in proper relation to the seat. In addition the possibility of a valve sticking is reduced to a minimum because of the absence of a dry stem and guide.

### Multibestos Lined Brake Shoes for Fords

This product is made of cold rolled steel and lined with 3/16-in. Multibestoes three-ply regular production brake lining. The lining is of extra thickness to insure long wear, and this, with the steel shoe, presents a flat and true surface on the inside of the drum. The complete set of two brake shoes comes packed in an orange and black telescope



Multibestos lined brake shoes

carton. The manufacturer is the Multibestos Co., Walpole, Mass., and the list price is \$2.50.

# GETTING NORE OUT of the SHOP

B ELOW are described some new articles of shop equipment which are well worthy of the attention of the progressive maintenance man. It pays to keep up to date in the matter of shop equipment in order that you may secure your share of automotive maintenance work. Owners are critical and they expect the best. Give it to them by using the right kind of tools for your work.

### Peerless Reboring Mill

The Peerless is a self-contained reboring mill equipped with a gauging device which, without much skill on the part of the operator permits the setting of cutters for reboring cylinders to suit variations in diameter found in the standard oversize pistons, thereby eliminating all dangers of mistakes, it is stated. The price of this mill complete including a tool cabinet is \$300 when arranged for belt drive and \$375 for motor drive including the motor.

In this machine the boring bar is guided above and below the block and it obviously is necessary, therefore, to remove the block from the engine when the reboring operation goes on. The boring bar is of carbon steel and is guided in graphite bronze bearings. The two opposed tools balance the cutting force to reduce to a minimum side thrust. As the bearings require no lubrication and the bar remains dry, dust and grit cannot adhere and get into the bearings. The bed is mounted on three legs so it cannot be sprung out of shape when mounting on the floor.

The boring head is a split collar having two slots cut into the face in which the cutters are clamped by wedges. The head is 3% in. in diameter and tools can be set to bore up to 4½ in. A compensating drive ring couples the worm gear and boring bar and drives the bar

Peerless reboring mill

through the engagement of its two opposed keys in the keyways in the lower part of the boring bar. The feed is engaged or disengaged by pushing the hand wheel forward or pulling it outward. The tools advance at the rate of 1 in. per minute.

A bushing of the same size as the boring bar is mounted in the center of the frame in which are set two micrometers located exactly the same distance from the extending arm to hook under the radius rod. The handle is then pressed down until the spring is raised to the proper height so that the hanger easily can be inserted. A block is furnished to steady one end of the spring while the tool is used at the other end. A ¾ in iron pipe or old axle shaft can be used for a handle. The price of the tool is \$7. It is furnished without handle and weighs 12 lbs.



the center of this bushing. The boring head is clamped upon the bushing in the same manner as when on the boring bar. After the cutters are set to the micrometers a half turn of the boring head brings each of the tools against the opposite micrometer and gives an accurate check on the setting. In setting to size, the skirt of the oversize piston can be placed between the micrometers, the latter set to caliper the piston when they both read alike and this setting transferred direct to the boring tools without actually taking a dimension.

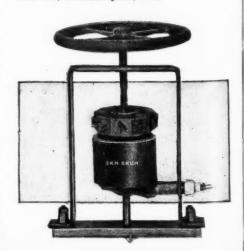
The machine is furnished with clamps for holding the blocks and a centering cone which is slipped on the boring bar for locating the boring tools in proper relation to the hole. The machine requires 3 by 3 ft. floor space and the total height of the machine is 78 in. It is made by the Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.

### Manley Spring Shackle Tool

In order to facilitate the removal and replacement of the spring hangers on Ford cars, the Manley Manufacturing Co., York, Pa., has brought out a tool which does this work without the use of a jack, hoist or any other device. To install hangers it is only necessary to apply the tool by replacing the lifter or upper jaw between the spring and axle, allowing the lower jaw to rest on the axle and

### Rotary Branding Machine for Identification of Batteries

This consists of cast iron circular disc with 10 numbers cast on the circumference below which is a gas burner for heating it to a dull red. The disc is revolved to get the number desired and the battery pushed against it. The disc is then reindexed and the battery moved along about the width of the number and the second number branded on. This machine is designed to obviate regular branding. The price is \$25 and it is made by S. R. M. Orum, Inc., 503 11th St., Philadelphia, Pa.



Rotary branding machine

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### Shows That Will Help Business

NEW show program that ought to be of great help to the automotive industry has been announced by the Motor and Accessory Manufacturers' Association. Enlarging its program this association has sanctioned for its membership participation in important automobile shows in cities extending from the Atlantic coast to the Pacific coast. Heretofore this participation has been limited to the national shows at New York and Chicago and the very important show at Boston. Cities added to the show list are Kansas City, Cleveland and San Francisco.

Now that the trade recognizes that the automobile business is much more than selling new automobiles it is necessary that proper merchandising effort be made to place before the public such transportation necessities as parts, equipment and tools which are used to provide maintenance of transportation vehicles.

The growing importance of the shows as gathering places for the trade to learn about new products for use and sale in the transportation store means that more and more the manufacturers are taking advantage of the opportunity to exhibit and demonstrate their products for the benefit of dealers. This method is proving to be a wonderful support for the advertising that manufacturers do to introduce their products to dealers. To have the large group of manufacturers in the M. & A. M. A. participating in the six big automobile shows adds interest and value to those exhibitions.

### Autumn Is for Motoring

PROBABLY at no season of the year are the highways more filled with motorists than in the alluring days of October. We have heard of the perfection of June days, but from the standpoint of the motorist there is no season that compares with October. There is just one drawback-so enticing is the season that in the vicinity of our large cities the improved roads are far short of adequate to carry all who would drive and enjoy nature at her best on the week-end holidays. But all this means business for the transportation store. The dealer who with the passing of summer believed his opportunity for this year was passed and crawled into his hole is missing some very profitable business days.

### Take Care of Things

T is mighty annoying to the car owner when his engine begins  $oldsymbol{1}$  to miss and sputter and spit and run erratically and without the old pep and power that it displayed all summer. Something is wrong, carbureter, ignition, timing, fuel feed-he doesn't know just what-but it is terribly annoying. So he goes around to his maintenance man and tells him what the trouble is and is promised that the engine will be put back in the pink of condition.

He calls for his car, eager to get behind the wheel and feel her respond in the old form to gentle pressure on the accelerator. But where is his ignition key that he left with the maintenance man? It can't be found. A careless mechanic has lost it and the car cannot be started until a new key is obtained. Not long to wait, but a very annoying delay.

At last the car is started. It does not seem to be running very well, but the engine is cold and no doubt it will be all right as soon as it is warmed up. So he drives away after having written a check that a few years ago would have paid his house rent. He starts for a little drive to try out the car, hoping with the trustfulness of a true optimist that in a little while speed, power and flexibility will be his as of old. But

instead of getting better, the engine runs worse. It sputters and hesitates and lopes. In disgust the owner drives home, puts the car away for the night, determined to tell the shop proprietor in the morning what he thinks of him.

And then before he can sit down and read his paper he has to spend 15 minutes with scrubbing brush and soap to remove from his hands the grime and grease that the mechanic left on the steering wheel.

And thousands of maintenance shop proprietors knowing that these conditions exist make no effort to improve them.

### The Battery Guarantee

ERE is something for the man who sells batteries to think about before he passes on to his customers any extravagant representations in the form of guarantees:

gant representations in the form of guarantees:

Battery advertising frequently contains such statements as:
"Guaranteed for Two Years," "Backed by an Iron-clad Guarantee," or "Guaranteed for Three Years," giving the man who reads it the impression that such guarantees are unconditional.

If they are unconditional, it is an unsafe policy for the manufacturer, for every battery man knows that the length of efficient operation of a battery depends upon many things other than the "inside" of the battery itself. Let someone set the charging rate wrong, or let the generator be out of order—there are many things upon which a battery must depend over which the battery manufacturer has no control.

If the guarantee is conditional, and not so specified, it is unfair to the customer, as he has the right to know the conditions.
"A guarantee is only as good as its maker."

Any reputable manufacturer will have the efficient operation of his product at heart and will place upon it a guarantee within reason and one that he can live up to.

Do not misrepresent—explain your product and tell the truth. The foregoing appeared in Prest-O-Lite Power and reminds

The foregoing appeared in Prest-O-Lite Power and reminds us of the effort being made by the National Battery Manufacturers' Association to have guarantees standardized so as to protect both the car owner and the service station. A 90-day guarantee is certainly sufficient to take care of any defects which might be due to faulty material or workmanship. No motor car is guaranteed to run seven or eight years before it falls to pieces. Why should a battery be guaranteed to the disintegration point?

### By Protecting the Driver the Spectator Is Safeguarded

THE recent fatal accidents of Joe Boyer and Jimmy Murphy I in this country and of Dario Resta in England should teach a valuable lesson to the men who manage and build the big time race tracks. The direct cause of death in all three cases is something that can be alleviated and to a great extent elimi-

The correction lies in the erection of adequate retaining walls for all tracks. These retaining walls must be strong enough to stand the impact of 1,700 lb. traveling at 125 m.p.h. They must be built of something better than wood beams and should be absolutely non-splintering.

This is an era of high velocities and for purposes of safety railroad coaches are now built of steel instead of wood, every track terminus has a husky retaining buffer, airplane pilots carry parachutes and every paved street has a concrete curb which acts as a retaining wall.

With the engineering skill available it should be possible to construct some sort of retaining wall for race tracks that will absorb the speed of an uncontrollable car and confine it within the bounds of the track without disintegregating into deadly splinters. Such safeguards are needed for the drivers of the present-day racing car and as they have an equal effect in protecting the spectators they should be made compulsory.

# Heavier Sales Expected in November

### Business Pace Satisfactory Despite Season's Drawbacks

### Manufacturers Continue Policy of Building Cars in Sufficient Number Only for Present Demand

NEW YORK, Oct. 13.—Despite the usual drawbacks of the pre-election period, sales of automobiles are progressing at a satisfactory rate, with some hesitancy shown and buying in many instances being deferred until next month. There is no decline in volume, taking the country as a whole, and it is felt that in those sections where there has come a slowing up the slack will be overcome in November. This will not make next month, however, abnormal in sales volume, neither, from present indications, will it bring October below normal for the month.

The first week in October shows that September operating schedules are being followed closely. None of the output, factory reports indicate, is going into warehouses or being used to replenish dealer or distributor stocks. Manufacturers are not building against any possible demand but only for actual consumer requirements. When more active operations will begin toward getting ready for spring demand is problematical, but it is not likely that any great forward step will be taken this year.

### Step Up Maybe First of Year.

The stepping-up is more likely to occur the first of next year when the outlook will be better defined and both city and farm buyers will indicate clearly their absorbing power. What buying comes from farm districts this year is expected to be merely a forerunner of what the industry may look for next year and will not constitute any large part of his purchasing. The return of the farmer to the market is not strongly noticeable at the present time.

Export business is doing well, with prospects that the year will show an increase over the record months of 1923. New Zealand, where conditions are fundamentally sound, is absorbing a good volume of American-made cars as are Australia and Argentina where crops are excellent and bring good prices.

Aggressive sales campaigns throughout England and the Continent are forecast by the large representation of American cars at European shows. American producers expect much from the readjustment of economic conditions abroad and will devote greater attention toward producing cars for export that meet the particular requirements of the foreign market. This will provide a greater outlet for the American-made product and enable the manufacturer to maintain a comparatively steady level in production the year round.

### SELECT AJAX SUPERINTENDENT

RACINE, Wis., Oct. 13.—Announcement is made by David Averill, vice-president and general manager of the Ajax Motors Co., of the appointment of Walter Helber as general superintendent of the plant. For the past 17 years, Mr. Helber has been identified with one of the large automobile manufacturers at Flint, Mich.

### General Motors Dealer Takings for Month Exceed Retail Sales

NEW YORK, Oct. 13.—So far as General Motors units were concerned, September reversed sales conditions in August. Whereas in the latter month deliveries to the ultimate consumers totaled higher than deliveries by the manufacturers to their distributors and dealers, in September it was the dealers who took the majority of the cars produced.

The usual monthly report issued by General Motors shows that in September the consumers accepted deliveries of 49,188 cars, while the middlemen bought 52,106 units.

For the nine months' period there has been a decrease of 7.52 per cent in deliveries to consumers, compared with the same period in 1923. Totals for the first three-quarters of the year are: consumers, 543,924; dealers, 494,382.

### 10,000 Attend Outing Given by Philadelphia Ford Dealers

PHILADELPHIA, Oct. 11.-No less than 10,000 persons attended the first annual Ford outing and barbecue, held under the direction of the Philadelphia Ford Dealers and open to all owners of Ford cars, at Byberry, Sept. 26 and 27. Officials estimated that upwards of 5,000 automobiles were parked in the fair grounds enclosure. A feature was a parade of Ford products, more than 200 passenger cars and Fordson tractors of different models and designs taking part. Two comic cars, one representing the Prince of Wales and his royal entourage. and the other a burlesque of a rustic in full regalia, brought up the rear of the procession around the race track.

There was an ox roast, a demonstration of Fordsons and a number of Ford contests, including races, more than 300 prizes being awarded, from a touring car and a tractor down to a spark plug.

### ADDS TOWN CAR

MARYSVILLE, Mich., Oct. 13.—Wills Sainte Claire has added a town car to its line of bodies. It is a de luxe model all the way through, finely finished and luxuriously appointed. The body is custom built. The price is \$5,500.

### Michigan Association to Hold Convention Regionally

### Nine Separate Gatherings in Various Parts of State Is Plan of Manager Edenburn

DETROIT, Oct. 13.—Instead of the usual annual convention of the Michigan Automotive Trade Association, W. D. Edenburn, manager, has arranged for a series of nine negional meetings which will be held in principal cities during the fall and winter months. By splitting the convention up and holding it regionally to suit the greater convenience of members, he plans to get the fullest measure of support behind its activities.

The first of the regional meetings will be held in Ann Arbor Oct. 20, where the dealers of that section will be addressed by Herbert Buckman, secretary and manager of the Cleveland Automobile Dealers' & Manufacturers' Association, and George W. Welch, Republican candidate for lieutenant governor of the State. Mr. Buckman will discuss general conditions affecting the automobile business, and Mr. Welch will discuss legislative activities in the State as affecting the automobile business. The regular business of the association also will be discussed to outline activities during the coming year.

Cities in which the other regional meetings will be held are Kalamazoo, Grand Rapids, Saginaw, Jackson, Flint, Lansing. Port Huron and Detroit, the Detroit meeting also taking on the function of the annual business meeting at which final action will be taken on all matters developed during the regional meetings. Officers for the new year will be elected at the Detroit meeting which while in a sense a part of the regional program, will also as the final meeting draw attendance from all other regions, and be most suitable for concluding the affairs fostered at the earlier group meetings.

The opening meeting at Ann Arbor will be under the auspices of the Ann Arbor Automobile Dealers Association and will be held at the Michigan Union.

### SEMMES COMPANY REORGANIZES

WASHINGTON, Oct. 13. — Raphael Semmes, former vice-president, was elected president of the Semmes Motor Co., succeeding his late brother, C. W. Semmes. Mrs. C. W. Semmes was elected first vice-president, E. B. Semmes. second vice-president and treasurer: J. A. Sweeney, secretary, and M. Wilder De Neans a new director on the board of governors.

The Semmes company handles Dodge Brothers cars locally and a fortune of \$387,000 was left by the deceased president of the company, all being made in the automobile business.

### Large Automotive Display at Electric Railway Assn. Show

### Six-Wheel Buses and Air-Operated Brakes Among Features of Atlantic City Exhibits

ATLANTIC CITY, Oct. 11.—Six-wheel buses, more extensive use of six-cylinder engines and air-operated brakes, and the introduction of better appearing and more comfortable bodies are among the important features of the automotive exhibits held in connection with the American Electric Railways Association Show here.

Balloon tires have made their first appearance in the bus field, while four-wheel brakes, some mechanically, some air and others hydraulically operated, are becoming almost as common as on passenger cars. Air chambers are used extensively.

Some 15 bus manufacturers have exhibits of complete vehicles, while numerous body and parts makers are showing their wares. The attendance at the show is excellent and includes many automotive executives and engineers besides those having their own exhibits. Nearly half the show space is used by concerns which manufacture some automotive equipment.

Among exhibitors who have one or more entirely new chassis, shown for the first time, are Mack, Yellow, Uppercu, Garford and Six-Wheel.

### Mack's New Offering

Mack's new showing is a six-wheel chassis of mammoth proportions, fitted with a new 100 hp. six-cylinder engine and intended for high speed interurban service. The wheelbase is 266 in. All six wheels have brakes, the rear being the Servo type, foot operated, and the front and propeller shaft brakes are band operated. The front wheels have live spindles and two propeller shafts drive two rear axles. The chassis weighs 11,000 lbs. and will carry a de luxe body seating 33 passengers.

The new Yellow Coach chassis both have six-cylinder sleeve-valve engines and frames reinforced with tubular members. All Yellow chassis have balloon tire equipment, including the double deck city type.

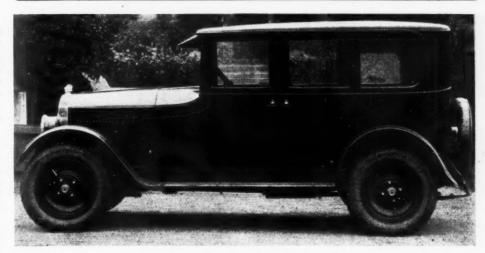
Many bodies are fitted with wicker seats, often with double spring cushions. Bodies in general are more attractive and many have lines very similar to the latest passenger cars. Some are painted with pyroxylin lacquers and leather interior trim is popular.

Yellow coaches have a new air brake system of the company's own make, operated by pistons in wheel brakes.

Timken Axle is showing a new brake with air-operated diaphragm actuating a piston of the hydraulic system which applies Lockheed brakes.

Metal sash is widely used in body construction, while plywood also is employed extensively. Bodies are constructed entirely of steel but a majority still use much wood.

### Yellow Cab Manufacturing Company Producing Drive-It-Yourself Passenger Sedan



CHICAGO, Oct. 13.—The Ambassador "Drive-It-Yourself" passenger sedan is now in production by the Yellow Cab Manufacturing Co. This vehicle, known as model D-1, is made to carry five passengers and is intended, primarily, for sale to operators of motor livery service. It will be sold, however, to anyone who wants to buy it. The retail price is \$1,695, f. o. b. factory.

This car is equipped with a special "L" head, six-cylinder engine built by the Continental Motor Co. It has bore of 31/8 in. and stroke of 41/4 in. The body is custom built in the Yellow Manufacturing plant, and it is upholstered throughout with Spanish leather.

It is equipped with rear wheel service brakes of the external contracting type and emergency brake on the transmission. The wheelbase is 114 in. The body is finished in dark blue.

### URGE SATCHELL'S ELECTION

HARRISBURG, Pa., Oct. 13.— E. T. Satchell, vice-president and director, will be recommended for election to the presidency by the board of directors of the Pennsylvania Automotive Association when this organization holds its convention in Wilkes-Barre, Oct. 17-18. George G. McFarland, president and general manager of the association, at present is chairman of the directors' "Satchell for President Committee." He has issued a letter to association members asking their support of the board's choice.

### F. HALL MARMON KILLED

INDIANAPOLIS, Oct. 13.—F. Hall Marmon, son of Walter Marmon, chairman of the board of directors of Nordyke & Marmon Co., was killed in an automobile wreck near here Saturday. Young Mr. Marmon's car skidded in soft gravel as it was being turned to pass another car. F. Hall Marmon was 26, a graduate of Boston Tech, and was considered a brilliant automotive engineer. He had been in charge of Marmon experimental work. He is survived by a widow and one child.

### TIEDEMANN TO DETROIT

DETROIT, Oct. 11.—A. C. Tiedemann, formerly sales supervisor at the New York Branch of Willys-Overland, Inc., has been appointed assistant manager of the Detroit Branch of the same company.

### Olds Sales for Year Near 48,000 Cars, Says Statement

DETROIT, Oct. 13.—Sales by Olds Motor Works in the twelve month period in which its present model has been in production approximate 48,000 cars, according to company statement. In September sales approximated 4,500 this representing about the number of retail sales. This was the best month since April and will be exceeded by October according to orders now on hand, the factory declares.

Demand for its new coach and for the other enclosed models of its line has been so heavy, the factory declares, that it confined all operations during a one week period to closed models exclusively, this being the first time that open car manufacture has been completely suspended in the 27 years of its existence. Demand for the coach has been greater than anticipated, says the company, dealers getting practically instant turnover.

Sales conditions are better at the present time in the agricultural districts, than in the cities, the company says, the latter trade being low because of reduced industrial activity due to the coming elections.

### TO RETIRE FROM FIELD

HARTFORD, Conn., Oct. 13.—The Marshall Motor Co., Hartford, Conn., Franklin distributor, is to retire from the local field on Nov. 1.

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# Chicago Holds Second Closed Car Show

### 41 Retailers Participate in Exhibition at Coliseum

Event Sponsored by Trade Association Scheduled to Hold Forth Through Present Week

CHICAGO, Oct. 13 .- The Second Annual Closed Car Show to be conducted by the Chicago Automobile Trade Association opened Saturday evening under most favorable conditions and with an outlook for ideal weather. The show will continue throughout the present week. It is presenting to visitors in the neighborhood of 200 enclosed passenger cars, representing a list valuation of around \$600,000, and the last word in modern evolvements by American car manufacturers. To say what features seemed to attract most popular interest would be somewhat venturesome, although it was apparent that those who attended the show on the first two days saw much to engage their attention and admiration. Four-wheel brakes and balloon tires, while already well established in motordom, found many eager prospects who wanted to know more about them while the changes in body designs with late refinements and equipments and fittings calculated to add to the owner's comfort quickly caught attention.

### **Green and Gold Setting**

Staged in a beautiful setting of green and gold decorations the ensemble presents an alluring picture, giving a suggestion of the growing tendency to the longer wheelbase and lower center of gravity in the closed types of motor vehicles. While built lower to the ground it is easily discerned by the observer that these suggestively underslung models afford ample ground clearance. At the same time they have a sturdy appearance.

That manufacturers have been successful in the feminine appeal was demonstrated by the interest of this sex, the beautiful effects of finish, with a departure of no small extent from somberness, the captivating interiors with variety in upholstering and the numerous devices for convenience of the occupant—all registered well with the sex it was obviously intended to please. In a number of models there is an upholstered arm rest at the side of the back seat. Elcar, Nash, Case, Jordan, Packard and Stearns being among those having this feature.

There seems to be a tendency to make fenders more rigid either through heavier construction or by more embossed paneling.

On practically all of the models shown the heater is standard equipment, with foot rest conveniently located directly in front of the register. Buick presents its



General View of Chicago's Second Closed Car Show

two-passenger model with rear steps to facilitate entrance to the rumble seat. Integral or built-in visors seem to be popular features.

#### **Extended Rear Panels**

Many of the enclosed bodies with solid tops are constructed with metal upper rear panels finished in gloss black which extend to form the extreme rear portion of the roof. To produce a neat mounting and provide greater visibility in those cars having sloping windshields, there is a noticeable inclination to utilize the space between the windshield and front door pillars by building in triangular glass panels. Lexington, Reo, Paige, Jordan and Stutz are examples. Outstanding, however, from the average spectator's point of view are the trim color effects in body decoration. These occasion more pleasing comment and indicate that the public likes style in a motor vehicle.

The show was preceded by an intensive advertising campaign and large attendances are looked for. Harry P. Branstetter is chairman of the C. A. T. A. show committee and L. L. Fest is show manager. Forty-six makes of cars handled by 41 Chicago agencies comprise the display.

### INDUSTRY PIONEER DEAD

CORTLAND, N. Y., Oct. 13.—E. H. Brewer, chairman of the board of the Brewer-Tichener Corp., is dead, age 73. following a short illness. Mr. Brewer was a pioneer in the industry, developing an extensive line of trimming hardware, bow sockets, drop forgings and stampings. His company, the Cortland Carriage Goods Co., the Cortland Forging and Crandal-Stone, were consolidated into the Brewer-Tichener Corp., a \$3,500,000 concern, in 1916.

### Convention of Nat. Standard Parts Assn. Set for Nov. 6-9

BUFFALO, Oct. 13.—The recently formed National Standard Parts Association, whose temporary headquarters are located at 901 Washington building, this city, announces that its first convention will be held at the LaSalle Hotel, Chicago, Nov. 6-9.

This session will be devoted to the setting up of a permanent organization and because of this the association will not stage a show as had been contemplated. Instead, the convention will adopt a constitution and by-laws, elect officers and definitely outline the work it hopes to do.

A tentative program of the proposed activities as drawn up by the executive committee will be presented. This program includes the promotion of a yearly trade show and convention, the establishment of a catalogue department to assist parts jobbers and manufacturers in building up their catalogues and eliminating duplication of effort; the establishment of a credit and collection department for the benefit of members; the conduct of field surveys on trade possibilities and distribution methods; the dissemination of trade information among members; the development of standards to which parts should conform and the education of the public and trade as to standard brands of replacement parts. with a view to stimulating both the manufacture and the distribution of such

Affairs of the association now are being handled by C. B. Fraser, formerly of the King Manufacturing Corp., who has succeeded Anton Johannsen as secretary. The membership continues to grow and to date the association has thirty-eight jobber members and twenty manufacturers.

#### Nash Net Third Quarter Was \$1,205,766; \$1.75 Dividend

#### Kenosha Company Has Built More Than 250,000 Cars and Trucks in Its Eight Years

NEW YORK, Oct. 11.—Declaring the regular quarterly dividend of \$1.75 a share on the preferred stock, payable Nov. 1 on stock of record Oct. 20, directors of the Nash Motors Co., meeting in the east, announced that net income for the third quarter was \$1,205,766, after all charges and reserves for taxes. This compares with \$2,257,767 in the same quarter last year. The third quarter will give stockholders \$3.40 a share against \$4.48 in the previous quarter and \$7.22 last year.

For the nine months ended Aug. 31, net income was \$4,325,241, equal to \$12.81 a share on the common, after preferred dividends. In the same period last year net income equaled \$20.25 a share on the common

The Nash company, which is celebrating its eighth anniversary, also reports that in its eight years of operation it has built more than 250,000 Nash cars and trucks, with an aggregate value of \$310,000,000. Its first financial statement showed total resources of \$7,000,000, while today they are nearly \$42,000,000. For the first eight months of this year the company's total volume was \$29,738,154.

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#### SHORT MEASURE CHARGED

CHICAGO, Oct. 13—Six Chicago gasoline dealers were fined by City Judge Charles F. McKinley, as the result of short-measure charges. Fines ranged from \$10 to \$25 and costs. Carman Vacco, city sealer, launched a campaign against short-measure filling stations several days ago with this initial accomplishment.

#### PFEIFER JOINS BRUDE

CHICAGO, Oct. 13.—C. R. Pfeifer has been appointed sales manager of the T. M. Brude Co., of Chicago, makers of the Brude visor. Mr. Pfeifer was until recently sales manager of the Hill Pump Valve Co., manufacturing the Utility heater.

#### Dealers in Chicago District Hear Sales Congress Speakers

CHICAGO, Oct. 11.—Automobile dealers and salesmen of the Chicago district turned out in good numbers for all sessions of the Sales Congress held her on Wednesday and Thursday of the present week. The Congress was one of the series being conducted by the National Automobile Dealers' Association with the hope of stimulating motor vehicle sales and contributing to the improvement of merchandising methods.

One of the features was a banquet Wednesday night in the Gold Room of Congress Hotel which was attended by 520 automobile mechants and salesmen. The banquet was attended by a number of tradesmen from other cities in this section who had attended session during the day and who remained over for the meetings scheduled for Thursday.

Full co-operation was given the N. A. D. A. speakers by the Chicago Automobile Trade Association which had well advertised the congress in trade circles and which accomplished effective results in drumming up a good attendance. C. A. Vane, general manager of the N. A. D. A., expressed himself as well pleased with the meetings held here and highly appreciative of the support given the movement by the Chicago Dealers' Association.

#### TWO STEP OUT

BOSTON, Oct. 13.—The Collins Motor Car Company, Star and Durant distributor in Eastern Massachusetts has gone out of business. Raymond J. Galvin, for years one of the largest used car dealers in Boston also has given up the business.

#### Earl Cooper Wins Raisin Day Classic, Then Hill and Milton

Time Made by Leader Is 105 m.p.h. Covering 150 Mile Distance in 1:25:13

FRESNO, Cal., Oct. 13.—Earl Cooper won the annual Raisin day classic here when the veteran speedway warrior covered the 150 miles in one hour, 25 minutes and 13 seconds, averaging 105 miles an hour.

Bennett Hill took second place and Tommy Milton was third, Fred Comer, former mechanician to Cliff Durant, was the fourth man to finish, while Robert McDonough protege of Tommy Milton and piloting one of Milton's entries, was fifth. Ernie Ansterberg, who had led the race for 44 laps, was flagged down by Starter Fred J. Wagner and awarded sixth place, although he was almost 100 miles behind the fifth place winner. Out of thirteen cars to start, only five finished.

Jerry Wonderlich was forced out of the race, 20 miles from the start, when engine trouble developed. pinion caused Wade Morton, driving the revamped Wade special with which Harlan Fengler almost lost his life at Indianapolis last May, to drop out 33 miles from the start. Peter de Paolo stopped at the pits on his 74th mile, but his mechanics worked in vain to get his engine started again and the race was over before they could get the engine to turn over. Tommy Milton stopped to change a right rear tire in his 92nd lap. Although the former champion got away from his pit in 1334 seconds, the stop cost him second place.

#### MAIL DIVIDEND CHECKS

NEW YORK, Oct. 11.—General Motors has mailed dividend checks to 47,746 common stockholders of record Aug. 25. The total number of stockholders now is 69,427 compared with 71,382 in the second quarter and 70,000 in the first one.

#### S. A. E. Guests of Yellow Cab Manufacturing Co. on Recent Plant Inspection Trip in Chicago



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#### Haynes Creditors Vote to Accept Composition Proposal

#### Offer of Apperson Interests Now Only Lacks Approval of United States Court

Kokomo, Ind., Oct. 13.—Creditors of the Haynes Automobile Company at a hearing here on Oct. 7 before Referee Harry C. Sheridan voted to accept the composition offer by which they will receive 15 cents on the dollar in settlement of the claims. The hearing was called for the purpose of examining the company's books, examining its officers and permitting the creditors to vote on the composition proposal.

Approximately 300 creditors were present, 258 voting acceptance of the offer, 20 opposing acceptance and the rest not voting.

The next step, according to Earl Barnes, attorney for the Haynes Co., will be submission of the creditor's decision to Judge A. B. Anderson, of the Federal court at Indianapolis for confirmation. Mr. Barnes stated that Judge Anderson will give 10 days notice to creditors of a session of court at which he will announce his ruling. The referee at this time also will submit his findings on the evidence heard Oct. 7, at Kokomo. As the referee has expressed himself as favorable to the composition it is believed Judge Anderson will grant his official approval.

Officials of the Haynes Company are more optimistic now than for the past year during which the company has been in financial trouble. They believe that it will be only a matter of time before the factory opens again.

The composition proposal resulted from an offer by interests controlling the Apperson Brothers Automobile Company, also of Kokomo, by which they would lease the Haynes plant for five years, with the privilege of another five and pay unsecured creditors on a 15 per cent basis. Settlement of the matter on this basis of course would mean the nullification of further bankruptcy proceedings.

#### PLAN SALES AND "AD" MEETING

CHICAGO, Oct. 13.—The Automotive Equipment Association has added to the program of its annual convention and show a conference of automotive advertising and sales promotion men, to be held in the Florentine room of the Congress Hotel, Chicago, Friday morning, Nov. 14. Invitations are to be extended to all manufacturing and jobbing members of the A. E. A., to trade paper representatives and also to all advertising agency men handling accounts of association-members.

#### DEALER FOR REO

CLINTON, Ia., Oct. 11.—C. C. Westphal has opened an agency for Reo cars and trucks at 113 Fourth Ave.

#### 2.74 Tires Per Car a Year Is Average

AKRON, O., Oct. 13 .- The average tire consumption per car per year, according to figures compiled by Miller tire statisticians, is 2.74. This figure stands out against 4.50 tires per car per year in 1915 and is indicative of the improvements which have been incorporated into tires of today. The rate of consumption decreased gradually from 1915 to 1921. Since 1921, however, the rate has remained about the same and tire manufacturers are of the opinion that approximately 2.7 tires per car per year is about as low as the rate can be expected to go.

## Spring Dating Big Problem Before National Tire Dealers

#### Adoption of Balloons Develop Complications Which Will Be Discussed at Akron Gathering

NEW YORK, Oct. 13.—Spring dating will be one of the important problems to be considered at the annual convention of the National Tire Dealers Association at Akron Nov. 18-20 because of the complications brought about by the adoption of the balloon tire.

Attention to this subject is called by President George J. Burger, who declares that the manufacturers should cooperate with the dealers and avoid overloading the latter in the campaign for spring business which is just about to start. He says that the problem should not be left to the dealer to solve alone.

Balloons, Mr. Burger holds, have complicated the workings of the spring dating plan because of there being 23 or more standard sizes of balloon casings, besides the regular run of high pressure tires. To him it would seem a big burden to ask dealers to overstock in the numerous sizes and he thinks manufacturers should carefully analyze the situation at the present time. Next year, he says, when balloons become regular equipment on most of the cars, the situation will be more stabilized.

As yet this matter has not been brought to the attention of the Rubber Association of America, but it is said that individual manufacturers undoubtedly have realized the complications caused by the multiplicity of balloon sizes in arranging their winter's selling campaign.

#### MOVE ROLLS ROYCE OFFICES

NEW YORK, Oct. 13.—The executive sales offices of Rolls Royce of America, Inc., have been transferred from Springfield, Mass., to the Colonnade Building, 58th Street and Seventh Avenue, New York, the same building in which the New York branch is established.

#### Merger Being Considered by Moon and Gardner Companies

#### Representatives of Manufacturing Concerns Admit Discussions but Issue No Formal Statement

ST. LOUIS, Oct. 11.—Preliminary steps that may lead to a merger of the Moon Motor Car Co. and the Gardner Motor Co., both of this city, have been taken this week. Two conferences, participated in by representatives of both concerns, have been held with this end in view but as yet the negotiations have not reached a stage which will permit of a formal announcement. Neither side will discuss the matter, although it is admitted that the deal is being considered.

#### **Both Prominent Companies**

Both companies concerned in the negotiations long have been prominent in the industry, meeting with success in marketing popular priced cars. The Moon company is one of the old-time makers, having been organized in 1907 as the Moon Motor Car Co. under the Missouri laws. In 1917 it became a Delaware organization, and last year turned out approximately 10,000 cars. Stewart McDonald is president of the company, having been identified with it in an executive capacity since its inception.

The Gardner company is credited with the production of 8,000 cars last year. It was incorporated under New York laws in 1920 and its control has been vested in the Gardner family, father and sons. This year Russel E. Gardner, Jr., became president, with other members of the family occupying prominent executive offices.

#### NEW STEARNS-KNIGHT OUT

CLEVELAND, Oct. 11.—Supplementing its present line of fours and sixes, the F. B. Stearns Co., Cleveland, has brought out a new light six.

The new line is built on a 121 in. wheelbase and is powered with a six cylinder Knight engine similar to that used in the present Stearns-Knight six except that it has a similar bore, 3¼ instead of 3¾. The stroke is the same, 5 in.

Five models are offered on this chassis, a sedan at \$2475, a coupe-brougham at \$2285, a 2 passenger sport coupe at \$2185, a 4 passenger touring car at \$1875 and a 5 passenger touring at \$1875. Balloon tires and natural wood wheels are standard equipment on all models. Four wheel hydraulic brakes are offered at an extra cost of \$150.

#### GETS JORDAN FRANCHISE

MOLINE, Ill., Oct. 13.—Fred R. Young, owner of the Plow City Garage, has taken over the sales of Jordan cars in Moline and surrounding territory, and is using the display rooms recently vacated by the McCullen Sales Company, dealers in Star and Durant cars. Mr. Young has for many years operated a service and repair garage, employing a large staff of expert mechanics.

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#### Bureau Points Out Basic Needs in Safety Campaign

#### Public Roads Division of U. S. Agricultural Department Sets Forth List of Fundamentals

WASHINGTON, Oct. 11.—Believing that consideration of highway safety is of the greatest importance in view of the great increase in highway traffic and highway accidents, the Bureau of Public Roads of the Agriculture Department has completed a careful study of existing conditions. The conclusions have led to the following statement of basic principles:

1. The development of safe roads by elimination of all known dangers in so far as such elimination is possible within physical and economic limitations.

2. Warning of uneliminated dangers by other devices of standardized form, uniformly placed with respect to the danger.

3. The development of safe vehicles by means of easily recognized signs and of safety devices.

4. Diligence and care in the licensing of drivers of motor vehicles to eliminate the incompetent, careless and irresponsible driver.

5. The devolopment simple, uniform, and effectual traffic regulations and the education of the whole public to a complete acquaintance with them.

6. The rigid enforcement of traffic regulations.

Engineers of the Bureau state that the problem can best be solved by the selection of the best methods and practices from the various States rather than the working out of new methods and practices.

#### Make Garage Transportation Store

(Continued from page 20)

munerative both to the hotel and the concession holder who hires the girl to check your hat. Small sales repeated is the key to success of your little garage.

When the big overhaul job comes wedge it between your regular daily service jobs and do not allow the big job of today to monopolize your shop. The owner who is to become a profitable customer is the one who brings his car regularly for the little jobs and doesn't wear his car out before bringing it in. Now if you turn him away because you are busy he likely will not come tomorrow and the fellow with the big overhaul job won't either because no difference what you charge him it is too much.

No loafing, no visiting, no cigarettes. It is unnecessary to have "No Loafing" signs, as the loafer is not comfortable in a busy atmosphere, neither will the inveterate cigarette fiend as a rule spit on a clean floor. Keep an especially clean place; require that cars be clean and free from road dirt and mud before taking in for mechanical service. All attendants wear white coats and attract trade by cleanliness and spick and span orderliness.

#### Pictures on Wall Help in Sales

ST. LOUIS, Mo., Oct. 11.—All the pictures of the salesmen of the Southwest Nash Co., Nash distributor in St. Louis, have been hung on the wall of the company's salesroom to enable a prospect to identify a salesman easily. All the pictures have the names displayed beneath. In the past, according to O. C. Hazelrigg, salesmanager of the company, prospects have frequently had dealings with a salesman and later were unable to remember his name.

If you will do all these things you will most certainly be successful and prosper in the little garage, but you will be a curiosity to motorists.

E. B. R.

#### MEACHEM GEAR EXPANDS

SYRACUSE, N. Y., Oct. 13.—The Weekes-Hoffman gear plant has been taken over by the Meachem Gear Corporation of this city, it has been officially announced. This is an expansion of the industry built up by J. F. Sabine Meachem and T. G. Meachem, whose father, Thomas Meachem, was one of the pioneers in the automobile and industrial gear industry in this part of the state.

The new plant will permit expansion of the Meachem company, which has been cramped for room in its old quarters on Canal street.

#### Hartford Agency Celebrates Hupmobile Contest Victory

HARTFORD, Conn., Oct. 13.-The L. & H. Motor Co., Hupmobile distributor entertained its sales force in honor of carrying off first prize in the country wide sales contest staged by the Hupp factory with a dinner at the City Club. Major Thomas W. Campbell, president of the L. & H. Motor Co., was toastmaster and the special invited guest of the evening was O. C. Hutchison, general factory sales manager. Major Campbell presented the salesmen with the cash prizes and loving cup awarded for the contest by the state distributors. Albert M. Mitchell of the Hartford branch of the L. & H. Motor Co. received \$300 in cash, a silver loving cup and a Hupp sedan. Fred J. Hansen of Mohen & Amidon received \$100 in cash and C. E. Amidon head of the firm received a silver loving Leslie Ramsey of the Hartford cup. L. & H. branch was presented with \$200 cash and A. L. Martelle of the New London branch with \$100 cash. Major Angelo Paonessa, New Britain, associate dealer, received \$100 cash. The salesmen mentioned above also received prizes from the factory as did 12 other members of the sales staff throughout the state. Bilmore & Moody of New Haven received a silver loving cup.

#### Says Europe Will Buy More U. S. Cars Next Year Than This

#### Alfred Reeves Thinks Broad Markets Abroad Will Follow Re-adjustments Now Being Made

NEW YORK, Oct. 13.—Investigation of export possibilities during a two months trip abroad leads to the prediction by Alfred Reeves, general manager of the National Automobile Chamber of Commerce, that American manufacturers will sell more cars in Europe in 1925 than this year.

"Our American industry will probably export more than 400,000 cars and trucks to 114 foreign countries this year, with England as the best prospect among the countries of Europe," said Mr. Reeves in summing up the results of his observations. The outlook for big business is bright indeed, he thinks, but in order to get it the American industry must furnish co-operation that will enable their representatives abroad to meet the needs of their customers.

"Broad markets for American cars and trucks in Europe are certain to follow the readjustments now being made and more especially when our American industry carries out its plans for bettering the fundamentals that make for increased motor car use, such as our manufacturers through their trade organization have done in this country," continued the general manager of the Chamber.

"In general," concluded Mr. Reeves, "it may be stated that selling motor cars in Europe is not unlike selling them here. You must have a meritorious product at a proper price. You require service stations where repair parts can be obtained readily and where car stocks are available at short notice. You have to provide proper financing for dealers who wish to sell on time payments which practice is increasing, and if you have a branch you must have the same high type of a manager you have in this country."

#### Believed in Good Shop Equipment

EAU CLAIRE, Wis., Oct. 13.—Safecrackers have demonstrated an entirely new method of doing their work successfully by employing the ordinary wheel-puller in tearing the combination out of a safe. This happened here when the offices of the Wahl Trunk Co. were entered by burglars. First, it is evident, they broke into a garage and carried off a wheel-puller, with which they forced the dial out of the safe door. The device was left behind and was identified by the owner of the garage.

#### Revision of Prices on Star, Durant and Flint Announced

#### Advances Are Made in Some Instances While List Shows Several New Models

NEW YORK, Oct. 13.—A revision of prices on Star, Durant and Flint models is announced by Durant Motors, advances having been made in some instances, while several new models are included in the list. Increases have been made, ranging from \$40 up to \$255, the last being on the five-passenger sport touring Flint. The prices are f.o.b. Lansing, the list being as follows:

STA	R	
	OLD	NEW
5-pass. touring	\$ 540	\$ 540
5-pass. spec. touring	640	795*
5-pass. sedan	785	820*
5-pass. spec. sedan	935	1090*
2-pass. coupe	695	750*
2-pass. roadster	745	745
Chassis		445
6-pass. station wagon		635
DURA	NT	
5-pass, touring	890	890
5-pass. spec. touring	1090	1140*
5-pass. sedan		1365
5-pass. spec. sedan	1465	1550*
4-pass. coupe	1340	1340
4-pass. spec. coupe		1410*
2-pass, business coupe		1035
2-pass. spec. roadster		1080*
5-pass. coach		1185
5-pass. spec. coach		1250*
Chassis		780
FLIN	T	

FLINT		
Model 40		
5-pass. touring	1075	1075
5-pass. brougham		1630*
Model 55		
5-pass. touring	1495	1495
5-pass. sedan	2185	2185
5-pass brougham	2735	2735
4-pass. coupe	2095	2095
2-pass. roadster	1630	1630
5-pass, sport touring	1795	2050*

\*Indicates new models or a change in price.

#### TO MAKE LIGHT DEFLECTOR

COLUMBUS, Ohio, Oct. 13 .- The Auto-Motive Lighting Device Co., a new Ohio corporation, has taken over a portion of the old Allen Motor Co. plant at 400 Dublin Ave., and will soon start the production of a new headlight deflecting device which will automatically prevent glare and dim headlights. The device conforms to all the state laws regulating bright lights, and is said to give the driver a maximum of light, yet will not blind an approaching motorist, light is deflected below the level of the headlight itself. C. F. Young is president and P. R. Young, vice-president of the new company. F. A. Jones is sales-manager and M. L. Bigger, general counsel. Production will start between Oct. 15 and Nov. 1.

# Compulsory Automobile Insurance is Without Defender at National Meeting of Underwriters

Theory That Traffic Accidents Would Be Reduced by Forcing All Motorists to Take Out Protection Contradicted by Speakers

MILWAUKEE, Wis., Oct. 11.—Strong opposition to compulsory automobile insurance was voiced in a discussion of the subject at the annual convention of the National Association of Insurance Agents, held recently in Milwaukee. The fact that 16 states have such legislation under consideration precipitated the topic as one of the most important subjects before the convention. No defense of compulsory insurance was found in any quarter.

Following is a digest of some of the arguments made by leading underwriters at the convention against the compulsory insurance project:

"According to available statistics, there were substantially 15,000,000 automobiles registered in the United States last year. There were 17,000 traffic deaths—an average of one to every 800 automobiles. That percentage is very small and no one can justify laying on the 799 automobile operators the burden of guaranteeing the payment to the person who is injured by the one remaining out of the 800. It is not sound.

"Necessarily, automobile insurance must aim at either or both of these two propositions: the first is the prevention of accident, and the second, the insuring of payment to the injured after the accident. The chief and fundamental thing in connection with the consideration of compulsory insurance is the matter of accident prevention. There is absolutely no reason for compelling an insurance payment to a person who is injured where the one injured has, himself, been guilty of failing to take reasonable precautions.

"Then there is the bootlegger. He takes that car which he may get; the car doesn't belong to ham, as a rule. The question of whether that car is damaged is of no particular concern to him. Is he going to change because of compulsory insurance?

"Is the pedestrian's instinct of selfpreservation going to be improved or strengthened if, instead of the knowledge that he himself must assume and pay the expense incident to his injury, he is assured in advance that somebody else is going to pay?

"In most states you license the car and anybody can drive it. That is not sound. We are going to have automobile accidents so long as that condition obtains, and it seems that the solution of the problem is a proper examination of drivers in respect to ability to handle a car, which includes physical capacity, sight, hearing, their mental capacity, reading, writing, understanding traffic rules and regulations, and their moral responsibility.

"There are a goodly number of insur-

ance men who apparently think that compulsory insurance is going to produce a substantial increase in their volume of business at no particular expense to them. That is one of the greatest mistakes an insurance man can make.

"At first sight compulsory insurance looks like a fine scheme. Somebody is hurt in an automobile accident-oh, well, insurance will pay for the injury. But will the public mind be contented them? Will not the public still demand the hazard causing the accident to be removed? Will compulsory insurance reduce the number of accidents, check reckless driving, or make drivers more careful? It will do nothing of the kind. If the reckless or indifferent driver who today is without insurance and is mowing down the unfortunate pedestrian in his path, has insurance protection to cover his acts, he would be a greater source of danger and would take more risk. It is also a reasonable supposition that compulsory insurance would increase carelessness on the part of the pedestrian and thus increase the danger of accidents.

"There are going to be accidents. We can't escape them; they are in the nature of the hazards of life, and it is a fallacy to look to the government or to the state to insure us, to undertake a fraternalistic scheme which will reduce the very essential law of self-preservation and self

#### Gives Views of Industry on Compulsory Insurance Issue

WHITE SULPHUR SPRINGS, W. Va. Oct. 11.—George M. Graham, chairman of the Traffic Planning and Safety Committee of the National Automobile Chamber of Commerce, represented the automobile industry at the convention of the International Association of Casualty and Surety Underwriters here this week, going into detail in his address on the safety work being done by various or ganizations and closing by outlining to the underwriters the industry's views in the matter of compulsory automobile in surance.

"The automobile industry has not up to this time been able to convince itself of the equity or the efficiency of compulsory insurance as a safeguard to traffic."

Discussing safety work, Mr. Graham proposed that through revocation of licenses, jail sentences, and the impounding of the car for a period depending upon the gravity of the offense, the operator convicted of carelessness resulting in serious injury or death should be made to realize that highways are open only to those who can use them legally.

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#### Good Representation of U.S. Cars at Annual Paris Show

#### New Chassis Models, Novel Brakes and Large Increase in Fabric **Bodies Among Features**

PARIS, France, Oct. 10 .- (By Cable) .-A dozen new chassis models, several novel brake constructions, tremendous increase in the number of fabric bodies and the appearance of an unusually large number of American cars, are the chief features of the nineteenth annual Paris Passenger Car Show, which opened here Oct. 2 and which will close Oct. 12.

Thirteen American vehicles are on exhibition, a number larger than in any previous year. Every French, Italian, and Belgian manufacturer of importance is represented, while three English exhibitors complete the salon. The American makers represented are Lincoln, Overland, Ford, Dodge Brothers, Packard, Oldsmobile, Oakland, Marmon, Chevrolet, Buick, Studebaker, and Chrysler.

Most of the American makers seem more interested in getting sales connections throughout Europe than in attempting to sell cars in France itself. Nevertheless, the great number of American exhibits is causing some apprehension among the French manufacturers.

#### Good Business Outlook

The business outlook for 1925 is very promising. Recent statistics show that the number of cars in France has increased by nearly 100,000 during the past year and there is every indication that this rate of growth will continue for some time to come. Removal of the import duties in England has proved helpful to the French industry, but the additional volume of business resulting from the removal of British levies has not been nearly so great as was generally expected.

There have been no price changes on French cars although reductions have been made on exported vehicles. Practically all of the French makers, however, are giving much more liberal discount to distributors and dealers.

Mechanically the show reveals less change than any salon for the last three All of the manufacturers seem years. to be much more interested in pushing on toward quantity production than in introducing new models. About a dozen entirely new chassis are on exhibition, but most of the changes are along the same lines as those made last year.

#### Hispano Sniza Six

Hispano Suiza has brought out a small six-cylinder model and has abandoned aluminum cylinders for iron cylinders with detachable head. Practically all other chassis features on the new car remain the same as on the big six which is being continued.

Fiat has entered the light car field with a new 2-3 passenger sedan car carrying a four-cylinder 55 cu. in. over-

#### Says Average Motorist Spends Little More Than 24 Days a Year Behind Wheel of His Automobile

WASHINGTON, Oct. 13.-The average automobile owner spends the equivalent of 24 days and 4 hours out of each year in his automobile, according to data submitted by Pyke Johnson, Washington representative of the National Automobile Chamber of Commerce, to the Hoover Safety Conference.

In the discussion of the relative amount of time that the motorist is actually behind the wheel of his car, during the course of a year, Mr. Johnson, made the following calculation, which he believes to be approximately correct. He

figures it this way:

First read the speedometer to get the total miles traveled. Then divide by 20. Assuming that your average speed while using the car is 20 miles an hour, this gives you the number of hours you have spent at the wheel of your car. Divide this figure by 24 and you have the whole days you have operated the car.

The average mileage Mr. Johnson figures is about 12,000 a year. Dividing this figure by 20, the motoring hours are 600 a year, or 24 days and four hours if you motored consecutive hours and days.

head valve, overhead camshaft engine. This new model is fitted with four-wheel brakes and balloon tires. It is the intention of the Fiat Company to produce this light car in large quantities but deliveries are not expected to begin until the middle of 1925.

Itala has an entirely new chassis carrying a six-cylinder overhead valve engine with piston displacement of 122 cu. in.

Peugeot and Voisin have added new sleeve valve models to their line. The power plant of the new Peugeot has a piston displacement of 145 cu. in. while the displacement of the new Voisin is 125 cu. in.

#### **4-Cylinders Dominate**

Four-cylinder models continue to dominate with the sixes in second pisition. No new eights are shown. The overhead valve engine has made some progress but a great majority of the engines carry the camshaft in the base chamber. The use of aluminum pistons has become more general and a tendency to employ alpax metal pistons also is noticeable.

All Rolls-Royce models are equipped with mechanically operated front-wheel brakes. No stripped chassis are shown, however, so that it is impossible to examine the brake mechanism in detail.

The greatest brake novelty of the show is the Dewandre servo operating on vacuum in intake manifold. This construction is being used on Voisin, Nagant, and Ballot while other makers are considering its adoption.

No hydraulic brakes appear at the show, but there is evidence that a great deal of detail work has been done on mechanical brakes during the past year. Peugeot and Delahaye have substituted a braking system of their own for the Perrot type.

#### Renault's Oil Radiator

Renault now is fitting an oil radiator on its big six, and has equipped all of its large models with an engine-driven centrifugal oil purifier.

The plate clutch has gained considerable ground, Renault which always has been a strong supporter of the cone type, being one of several to adopt the plate clutch this year.

Balloon tires up to 51/2 in. size are used

on ninety per cent of the cars in the show, but few tires of larger size are employed because the French makers are afraid that they might cause trouble at high speed.

Citroen has introduced an all-steel sedan from America and is planning to build it in a new factory which will contain 500,000 square feet of floor space.

The show reveals an immense increase in fabric covered bodies on metal covered plywood and on frames such as those used in the Weymann system. Many copies of the Weymann type appear at this show and the inventor or that body is threatening to take vigorous legal action.

No commercial vehicles were shown at this exhibit since a separate truck show is scheduled for October 22-31.

#### GIVE CHATTEL MORTGAGE DATA

PEORIA, Ill., Oct. 11.—The Illinois Automotive Trade Association has bulletined its members on two recent decisions are regards chattel mortgages which it thinks is of considerable interest to

The bulletin says:

The bulletin says:

The Appellate Court has decided that chattel mortgages must be acknowledged before a justice of the peace in the town (township) where the mortgagor resides. The only other judge in the country who can take such acknowledgements is the county judge. This is important and if you have been following the practice of bringing in chattel mortgages from other townships and having them acknowledged in your township, correct this immediately in your township, correct this immediately by having them re-acknowledged in the township where the mortgagor resides, or before the county judge. Your mortgages if not properly acknowledged will not stand against any other lien no matter when action is brought on such lien.

The case was one over a car, taken on The case was one over a car, taken on appeal from Christian County. Possibly the law would release the purchaser or mortgagor from the terms of the chattel mortgage if he resisted payment. Legal reference quoted in the case is National Loan vs. Jones, No. 7636 Ill. App. 3d. Dist.

Here is another one just handed down: Here is another one just handed down: The holder of a chattel mortgage properly recorded, has a lien which takes priority over the lien of the garage or dealer who has repaired the car. The Illinois Supreme Court recently held this way, reversing decision of a lower court. In New York and New Jorgent the courts have held York and New Jersey the courts have held

#### Balboa Car Almost Ready for Production, Officers Announce

#### Work Started on Factory in California Which Will Be Operating Within 90 Days

FULLERTON, Cal., Oct. 13.—After more than eight years of study and experiment, the Balboa motor car is about ready for production, according to officers of the new concern. Work has been started here on a modern factory and active production will begin within 90 days. Plants call for the building of 1,000 cars the first year.

The Balboa super-charged engine is a four-cycle, eight-in-line type with a five-bearing overhead camshaft, five-bearing crankshaft, bore of two and three quarter inches and strokes of three and three quarters inches. Although the piston displacement is only 178 cubic inches, about that of a Ford, the motor is said to develop a maximum of 112 horse-power.

Overhead poppet valves, one and one half inches in diameter, are operated by roller rockers. Lubrication is provided by a two-gear oil pump with a capacity of one gallon per minute at maximum engine speed. The crankshaft and camshaft bearings, valve rockers and generator drive are lubricated under pressure. Separate return oil leads are provided from each end of all main and connecting rod bearings. The crank chamber is dry.

#### Unique Super-charge

The super-charge feature is unique. By the addition of auxiliary valves, pure air at atmospheric pressure is admitted under the piston. On the down stroke this air is compressed under the piston in a special pocket in the crankcase to a pressure of about twenty-eight pounds. Just before the piston begins its upward stroke the auxiliary valve rotates and permits the air to bypass on top of the piston, so that when the piston begins its upward stroke it starts with fifteen pounds pressure instead of the usual vacuum in the ordinary high-speed motor. On the up stroke air is again admitted underneath the piston, and when the

piston comes down on its explosion stroke the air is compressed.

The increased power said to be furnished by the super-charger has enabled the designers to decrease the weight of the engine and accomplish a great saving in fuel. The connecting rod, bearing, wrist pin, piston and rings weigh less than nineteen ounces. The entire engine weighs about 400 pounds. It is claimed that the car will run between 25 and 30 miles on a gallon gasoline.

Officers of the new company are O. W. Heinz, president and general manager; W. H. Radford, vice-president and chief engineer, and F. G. Mott Jr., vice-president and sales manager.

#### Massachusetts Registrations for 8 Months Show Good Gain

BOSTON, Oct. 11.—According to figures issued by Motor Vehicle Registrar Frank A. Goodwin there were 618,856 motor vehicles registered in this state during the first eight months of this year. This is a gain of about 20 per cent over the same period for 1923. Last year there were 515,211. This year there were 533,578 cars and 85,283 trucks, while in 1923 there were 438,826 passenger vehicles and 76,385 trucks. It is expected that the fees will run more than \$8,000,000 over the 1924 and the total vehicles will run well above 650,000 for the year.

#### REPORT BETTER SALES

KOKOMO, Ind., Oct. 13 .- A general resumption of near-to-normal production at a number of the large automobile factories is indicated by the marked increase in orders for products of the Kokomo Automotive Manufacturing Co., of this city, according to Neil T. Albright, general manager. The company among other items manufactures windshield wings and rear view mirrors and it is in these products that the demand is becoming especially brisk. The seasonal demand of the jobbing trade for the other products of the company is also well under way and this, coupled with the large number of orders from the automobile factories, has caused the factory personnel to be increased twentyfive per cent. The increase is in the form of experienced help in the beveling, rouge and assembly department.

# Co-operative Automotive Christmas Gift Campaign to Be Featured in Atlanta

ATLANTA, Ga., Oct. 13.—A co-operative Christmas advertising campaign will be conducted this year by the members of the Atlanta Automobile Association, who will foot the costs on a pro-rated basis. The purpose of the campaign will be to educate the public to giving more useful Christmas presents and stress the fact that a more useful gift, or a more appreciated one, could hardly be given than some sort of automobile accessory.

The series of ads to be published will run in the various Atlanta newspapers through the latter part of November and during December, and are now being prepared.

It also has been aunounced by association headquarters that the membership has increased by 57 since the first of this year, giving a total membership now of 175, more than 90 per cent of the entire potential membership in Atlanta.

### Oakland's First Fall Show Draws Record Attendance

#### Sell More Cars in Proportion to Attendance Than at Any Event in 5 Years

OAKLAND, Cal., Oct. 13.—Record breaking attendance features the first fall automobile show of the Oakland Motor Car Dealers' Association held here October 3-10, when a full line of 1925 models was shown by local dealers.

More cars were sold in proportion to the attendance than at any previous show held here, all of which have been in January, during the past five years. Good crops and a general lessening of the current business depression were responsible, in the opinion of Robert W. Martland, president of the Association and in charge of the show.

A system of financing the show was inaugurated this year whereby all expenses were actually met and paid for, before the doors were opened. Space was sold at one dollar a square foot and every dealer was asked to submit his All these requests were added and the floor space was found to be oversubscribed by 12,000 feet. Each dealer was then given his share for which he paid. This amount was used to defray expenses. An admission charge of 50 cents was turned into a fund, from which each dealer was returned his share on a pro rata basis. The dealer received back about seventy cents on each dollar paid for floor space.

#### First October Show

This is the first large automobile show on the Pacific Coast ever to be held in October. Records show that October is a good month for selling cars and as the San Francisco automobile show is held in the early spring, it was decided to hold one show in the fall and the other in the spring.

Cost of decorations amounted to \$12,500. A huge canopy, weighing more than four tons and covering 21,000 square feet of floor space was suspended from the roof. Flood lights were played on the canopy to accentuate the color scheme.

Motor car and truck dealers were placed in the main arena of the Municipal auditorium, where the show was held. This space contains 21,000 square feet. Equipment displays were placed in and about the corridors of the auditorium.

The Oakland show consists entirely of dealers. No distributors are given space.

#### LAUNCH SUPPLY COMPANY

MEMPHIS, Tenn., Oct. 11.—The Hays Supply Co., headed by D. S. Hays, president, Thos. A. Evans, vice-president and J. W. Hays, secretary and treasurer, has opened a new business here, catering to the southern trade in iron and steel products, auto rims, truck forgings, upholstering leather, automobile top material, spokes, rims, etc.

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#### Campaign on to Knock Out War Tax on Passenger Cars

#### Abolition of 5 Per Cent Levy Object of Joint Move by N. A. C. C. and A. A. A.

NEW YORK, Oct. 13 .- Abolition of the 5 per cent war tax on passenger cars by the next Congress is the definite aim of both the National Automobile Chamber of Commerce and the American Automobile Association, co-operating to relieve the motorists of this burden which they have borne for several years.

The American Automobile Association already has thrown its hat into the ring by urging its affiliated clubs to start something that will bring about this relief, while the Chamber, through its Taxation Committee, of which C. C. Hanch is chairman, has opened fire upon Congressional candidates by urging the elimination of these war measures.

In its appeal to its clubs, the A. A., over the signature of General Manager Ernest N. Smith, points to the effective campaign waged at the last session of Congress, which resulted in the reduc-tion of the "nuisance taxes" on tires, tubes, parts and accessories from 5 to 21/2 per cent and the elimination of the 3 per cent tax on trucks \$1000 and under and truck bodies \$200 and less and states that now the 5 per cent tax on passenger cars must go too. This legislation is saving motorists \$25,000,000 yearly, it figures and before it has been wiped out \$575,-000,000 had been paid in this form of taxation.

Backing up the A. A. A. in this movement, Chairman Hanch of the Taxation Committee of the Chamber, has sent to Congressional candidates the following

"It is six years since the end of the war, but there still remain on the statute books some discriminatory war excise taxes, which constitute a special burden on cer-tain industries and their customers. That

tain industries and their customers. That these are war emergency measures is evidenced by the repeal of many similar taxes in the past four years.

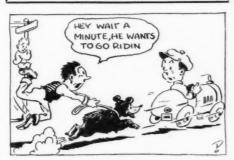
"Among those remaining are the automobile taxes. Congress in its last session, recognized the unfairness of these special levies by giving some relief on parts and accessories and low priced motor trucks, but has given none on the remaining trucks and passenger cars. This burden rests on the owners of 15,000,000 motor vehicles in the United States, one-third of whom are farmers, as many more of whom whom are farmers, as many more of whom are in industry, small merchants and men

of moderate means.
"We believe that this will appeal to "We believe that this will appeal to your judgement as an unfair condition and we hope that when tax reform again comes before Congress you will urge elimination of all of these war measures."

#### REPORT ON FOREIGN SERVICING

WASHINGTON, Oct. 11.-Tire inflation equipment in foreign markets, with many other types of automotive servicing, is far below the high standard set in the United States, the Automotive Division, Commerce Department is advised in a series of cables from various consuls and commercial attaches. Cheap labor and absence of demand for better facili-

#### Teddy, the Bear, Is Real Motor Fan



CHICOPEE, Mass., Oct. 13. Teddy is a little black bear not more than four months old, just out of the Canadian wilds, but no domestic dog ever took to riding autos with better grace than he. He is the gift of a Quebec man to L. P. Authier of the Chicopee Motor Sales Co.

The animal has developed a fondness for motoring in the short time he has been here and sets up a commotion every time a car rolls out of the establishment without him. He is a garage favorite and hundreds come to see him.

Although a bit wild he is fast accustoming himself to his public "Anybody can pet him, provided he treats him well," says Mr. Anthier.

ties explain in large part the lack of modern equipment in most foreign countries. As the number of automotive vehicles increases, however, the market for such apparatus is steadily expanding.

#### DEALER HAS SERVICE SCHOOL

CHICAGO, Oct. 13.—Chas. J. Dempsey Inc., Ford dealer here, has started a service school for mechanics in order to give better service and standardize procedure more thoroughly both as regards the car and the customer. One reason for the school is to insure that men on the night or day shift will give the same diagnosis on any particular trouble. Attendance is not compulsory and men attend on their own time, but there is no question but what the men who take a real interest in their work and care to advance themselves will avail themselves of the opportunity.

Ideas will be exchanged and repair processes as recommended by the factory will be thoroughly discussed from all angles, so that the men will have a chance to give as well as get useful ideas. The day men will attend the school every Monday from 5:30 to 6:30, while the night men will attend every Tuesday from 4 to 5 p. m. Every unit of the Ford car will be covered and the school will be continued until absolute uniformity of treatment is assured to the customer, no matter when he comes in, and regardless of who he talks to.

#### Ninety-Day Safety Drive Is Urged to Help Year's Record

#### N. A. C. C. Committee Chairman Would Have All Forces Unite in "Clean-Up" During Last Quarter

NEW YORK, Oct. 11 .- George M. Graham, chairman of the Traffic and Safety Planning Committee of the National Automobile Chamber of Commerce, believes that the number of motor fatalities in the final quarter of 1924 can be materially lessened from that of the preceding quarter if there is a united effort on the part of everyone with this object in view. A 90-day clean-up is urged by him in the committee's report on August accidents.

"Nineteen twenty-four must show an improvement over the terrible record of last year," said Mr. Graham. "If every community in the country will make a drive on this subject until the first of the year, we shall find a remarkable increase in safety.

"First of all, put away every reckless motorist for 90 days. Put him in jail if the law permits. Take away his license. Tie up his car. Whatever means are used, get him off the road. Then the great mass of law-abiding citizens can walk or motor in peace. If we once have this 90-day clean-up we shall never go back to the old conditions; and 1924 will go down on the books as the year in which America got a grasp on its traffic problems."

#### 100 Increase Over July

As reported to the committee by the 257 cooperating daily newspapers, there were 634 motor fatalities in August, which leads to the estimate of 1,500 fatalities for the entire country, an increase of about 100 over July.

Praise for Chicago is handed out in the report, which tells of the effective-ness of that city's crusade on the speeders. Insisting on a moderation of speed and making wholesale arrests for violations, the Chicago police got the situation so well in hand that in August the motor fatalities were reduced by half in comparison with the preceding 30 days.

That the campaign for safety on the highway is beginning to show results is demonstrated, too, by the fact that there were 33 cities in the United States in which there were no motor fatalities in

#### DROP CHARGE FOR "EXTRAS"

CHICAGO, Oct. 11.-Affecting 2,700 taxicabs operating in this city the Chicago Yellow Cab Co. has announced decisions to eliminate the customary fare charged in the past for extra passengers. Hereafter one fare, based on the initial rate of 35 cents, will cover. The Yellow Cab's action follows a similar decision on the part of the Checker company and De Luxe, the new order thus having been adopted by the three leading taxicab lines. Other companies are expected to fall in line also.

## With the Associations

#### Explain Used Car Plan

HOLYOKE, Mass., Oct. 13.—The Holyoke Automotive Dealers' Association gave a smoker to 40 salesmen in Hotel Nonotuck recently for the purpose of making them better acquainted with the operations of the new used car plan lately introduced here from New London, Conn. Russell W. Magna, head of the dealers' organization, presided, and talks were given by C. A. Boyce, manager of the Holyoke Auto Dealers' Exchange, Inc., and Harry Olivier of the Olivier Motor Co.

#### **Meeting Time Fixed**

ROCHESTER, N. Y., Oct. 13.-The annual meeting of the Rochester Automobile Dealers Association will he held November 4.

#### Support Road Bonds

PEORIA, Ill., Oct. 11.-The \$100,000,-000 bond issue, to be voted upon by Illinoisans at the November election is indorsed by the Illinois Automotive Trade Association and all dealers and motorists are urged by the I. A. T. A. to support it. It provides for utilization of license fee money for the construction of additional hard roads.

#### **Bulletins Valuable**

BIRMINGHAM, Ala., Oct. 13.-The Alabama Automotive Trades Association is rendering valuable service to its members through the medium of weekly bulletins of information which go out to the members from the office of the secretary James B. Farley. The various committees submit the information that they want circulated and the secretary has it mimeographed and sent out all over the state.

#### Discuss School Plans

CHARLOTTE, N. C., Oct. 11.-The Charlotte Automotive Merchants' Association at its last regular meeting heard Bryon Scott, of C. C. Coddington, Inc., discuss the feasibility of establishing an Automotive Engineering course at N. C. State college and at Clemson college. The decision was reached that the matter

should be taken up by the various dealers with the manufacturers to determine the proper courses.

Fourteen boys are enrolled in the course in automobile mechanics at the Belmont Vocational schools, one of the city's system, Principal Harry K. Moore told the automobile men in a talk on what the school is doing.

#### Make Remarkable Growth

BALTIMORE, Md., Oct. 11.-Remarkable growth is being made by the Garage and Accessories Dealers' Association of this city. The organization was launched about a year ago with 21 members but now has a membership of close to 200. The officers are William H. Claire, president; Seth H. Linthicum, vice-president; Philip J. O'Brien, treasurer, and Maurice R. Myers, secretary.

#### Gas Dealers Elect

BUFFALO, N. Y., Oct. 11.-The Western New York Gasoline Dealers' Association at its Sept. meeting here, elected the following officers: President, Wm. H. McLean; Vice-president, C. H. Quinn; secretary and treasurer, W. J. Hall.

#### Coming Motor Events

#### **Automobile Shows**

- 17-24 .....Jan. 1 Automobile Baltimore Nineteenth Annual Automobile Show, Baltimore Automobile Trade Association.
- Dixie Automobile Show, Municipal Auditorium, under the auspices of Birmingham Motor Trade Association, G. P. Caldwell, Secy. Birmingham, Ala.
- National Automobile Chamber of Commerce. Chicago
- Chicago. Second Annual Closed Car Show, Coliseum, under the auspices of the Chicago Automobile Trade Association. L. L. Fest in charge.
- ..Nov. 16-22 First National Transportation Show in American Exposition Building, promoted by Motor Truck Industries, Inc. William Hallanger, Manager. Transportation
- Chicago \_\_\_\_\_Jan. 26-31 Twentieth Annual Automobile Salon.

- ...Oct. 11-26 Fair Annual Automobile Show, Fai: Grounds, under the auspices o the Dallas Automotive Trades As
- Detroit Automobile Show, Detroit Dealers' Association. Detroit.
- Kansas City, Mo......Feb. 7-14, 1925 Kansas City Motor Car Dealers' Association Show.

- Manager.
- Twentieth Annual Automobile Salon, Hotel Commodore. New York.
- New York ... Jan. 2-10, 1925 hamber of National Automobile Chamber Commerce.
- Philadelphia......Jan. 10-17, 1925
  Twenty-fourth Annual Automobile Show, Philadelphia Automobile Trade Association, Commercial Museum.
- Twenty-ninth Annual Automobile
  Show. Motor Square Garden, under the auspices of the Automotive Association, Jno. J. Bell,
  Manager.
  Francisco Pittsburgh, Pa...
- San Francisco

#### Foreign Shows

London, England .... ...Oct. 16-25

#### Conventions

- Nov. 18-20
- Nov. 6-9 First convention, Notional Standari Parts Association, LaSalle Hotel.

- Chicago ..Nov. 10-15 Annual convention and show, Automotive Equipment Association.
- Chicago ......Jan. 26-29, 1925 Eighth Annual Convention, N. A. D. A., Hotel LaSalle.
- Cleveland, O ... Fall convention Motor and Accessory Manufacturers' Association.
- Cleveland. Joint Service Meeting of the So-ciety of Automotive Engineers and the National Automobile Chamber of Commerce.
- Columbus, O. Ohio Automotive Trade Associa-tion's annual convention.
- Detroit. Oct. 22-24 E. Production Meeting and S. A. E. P. Exhibition.
- Detroit \_ Annual Meeting of the Society of Automotive Engineers.
- Montgomery, Ala......Jan. 26, 1925 Annual Convention, Alabama Au-tomotive Trades Association.

#### Races

- Kansas City Mo.....Oct Kansas City Speedway Associa-tion—250 miles. Oct. 19

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#### Speaking of Curves

Prospect—"I have about decided to buy a car from another dealer. He has such nice looking bodies."

Corpulent Retailer—"So, it's a pretty body you want is it? Well, step this way, please. I'll show you mine."

Milwaukee is making plans to establish a "Museum of Safety." Imagine they will have an excellent display of stuffed jaywalkers.

As a matter of fact, WHAT OLD DIOGENES Happened to be hunting Was a PARKING PLACE.

"Three Armed Accessory Thieves Stage Series of Motor Holdups," announces a newspaper. And what we're telling you is that two-armed accessory thieves are bad enough.

#### Something in a Name

Bud-"We recently named our old bus Pandora."

Sid-"Why so?"

Bud—"Every time we lift the latch we run into a box of trouble."—JINX.

Well, why not a "Colonel House" for Mr. Coolidge? Just the sort of man he would pick to do his talking.

#### 1924

**Politics** 

Ranting

Explosives

Slams

Innuendo

Digs

Execrations

Nagging

Tirades

**Imputations** 

Alibis

Libel

Yarns

Evasions

Apple Sauce

Raspberry

Winter is coming—and the radiator will do its best to take the ice man's place.

The polls to which the women will flock in greatest numbers in November are the—barber poles.

A motorist claims to have gone from one end of Louisiana to the other without putting a drop of water in his radiator. Probably left the cap off and trusted to the elements.

One thing we've noticed—about the worst thing that a "gyp" can think of calling a competitor is—
"a gyp."

#### SERVICE AT SOAPY'S—



# Prices and Weights of Current Passenger Car Models

01.			1						SCI	Uai	TAT	ou	eis	
Shij		la D.	Ship			1				T				
AME	Pass. Body Styl	e Price	Wt.	Pass. Body Styl	le Price	e Ship	Pas	s. Body St	wla n	.	Ship.			
2985 8175	2-p Roadster 4-p Sp. Roadster	\$1,950	8020	8-p Roadster		3050	5-p	Seden B			Wt.	Pass	. Body Styl	e Price
\$260 3300	6-p Touring	1,695	3050 3380	5-p Touring	\$1,676 1,695	3098	5-p 5-p	Spec. "B"	Sedan 1,	350	GRAY 1755	5-р	"O" Touring	
8310	5-p Sport 7-p Touring	1,850 1,760	3400	5-p Sub. Coupe 5-p Sedan	2,396 2,485	3190	5-p	Sedan A Spec. "A"	Sedan 1,	385 185	1735	2-p	Coupe	\$63 <b>0</b> 750
<b>\$</b> 190 <b>\$47</b> 0	4-p Sp. Touring 7-p Sedan	1,885 2,550	8975	7-p Touring		2595	Г 5-р	"27" Touring			2030	3-p 5-p	Coupe Sedan	895 895
3810 AND	5-p Brougham	2,195		7-p Sedan	\$2,475 3,325	2780	5-p 5-p	Sp. Touring		45	HCS	5-p	Sport Sedan	995
2650	ERSON "41" 5-p Touring	#1 10F	CHALI 2865	MERS Y 2-D Roadster		3030	5-p	Bres. Coup	e 1,3 1,5	35	3360	4-p	Touring	\$2,250
2675 2925	4-p Sp. Touring	\$1,195 1,445	2950	5-p Touring	\$1,185 1,185	8030	5-p 5-p	Sedan Brougham	1,5 1,5	95	3750	4-p	Touring	
2875	5-p Sedan	1,425 1,695	3095	5-p Sp. Touring	1,295 1,335	DUES	ENBE	SRG St. "8"	1,0	99	3950 4010	4-p 4-p	Coupe	\$2,650 3,350
2925	5-p Sp. Sedan	1,895	3245 3620	5-p Coach 7-p Sedan	1,535	3600	2-p	Roadster	\$6,5	00	HATFI	ELD	Sedan	3,350
2975 8200	7-p Touring	1,595	CHAND	DLER SS	2,095	3700 3920	5-p 7-p	Phaeton Phaeton	6,2	50	3080	4-p	"6-55" Sport Touring	
APPE	7-p Sedan RSON "6"	1,945		2-p Roadster 4-p Roadster	\$1,795	3980 4000	4-p 4-p	Sp. Phaetor	n 6,5	00	3225 3300	4-p	Coupe	2,175
2965	5-p Sp. Phaeton 3-p Coupe	\$1,695 1,985	3055	5-p Touring	1,785 1,585	4350 DU PO	7-p	Coupe Sedan	7,5 7,8		HAYN	5-p ES	Sedan	2,350
3400	5-p Sedan	2,095	3020 4	1-p Royal Dispate	1,735 h 1,885	3300	2-p	"C" Roadster	\$2,09				"60"	
3450	5-p Sp. Sedan	2,295	3375 5	p-p Sedan Seda	n 2,045 1,995	3400 3600	5-p 5-p	Touring Sed	2,09	0	3590	5-p	Touring Sedan	\$1,600 2,300
	5-p Phaeton	\$2,485		-p Metro Sedan	2,195	BURA	5-D	Suburban Se	an 3,05 dan 3,05		HUDSO	Б-р N	Brougham 4 d.	2,200
	7-p Phaeton 5-p Sport Phaeton	2,535	3480 7	-p Limousine	2,195 8,095	2235	2-p	"A-22" Roadster	\$1,08		3300		Super Six"	
*******	7-p Sport Phaeton	2,900	CHEVRO	OLET "Superior"		2325	5-µ 5-p	Touring F.W	89	u   8	3425	7-p 1	Speedster Phaeton	\$1,400 1,500
4555	5-p Sedan 7-p Sedan	3,485	1690 2 1790 5	-p Roadster	\$495	2395	5-p	Sp. Touring	1,14	0 3	585	-p S	Coach Sedan	1,500 2,150
	7-p Sport Sedan 5-p Sport Sedan	3,850 3,750	1955 5-	-p Touring -p Phaeton DeLux	510 e 640	2405	2-p	Coupe Business Cou	1,34 pe 1,03	0   3	B675 HUPMO	7-D 5	Sedan	2,250
AUBUI	RN "6-43"			-p Coupe	725	2605	4-p	Spec. Coupe Sedan	1,41	0 1			"R"	
	5-p Special Touring 5-p Sp. Touring	4 405	1880 2-	D Utility Coupe	775 640		5-p	Touring Seds		0 2	705 5	-p T	loadster louring	\$1,225 1,225
2900	5-p English Coach	1,945	2070 5-	P Coach	695			Coach Spec. Coach	1,185		760 2	-p C	oupe	1,225
2885	5-p Sedan "8-63"	1 705	5-	p Sedan DeLuxe	795 940	ELCAR		"4-40-41" Touring		2	975 5	-p S	oupe edan	1,595 1,800
3225	5-p Sp. Touring	1,895	CHRYSL 2620 4-		\$1,625	2585 5	5-p 1	Demi Sp. Tour	\$995 ing 1,095	J	EWETT	p C	lub Sedan	1,475
	5-p Sedan 5-p Brougham	2,550	2570 5- 2600 5-	P Touring	1,395	2900 €	9-D	Sportster Sedan	1,195 1,495	26	590 5- 310 5-	p T	ouring	1,135
	-p Sedan	2,550	4-1	p Coupe	1,495 1,885		-p 8	Sp. Sedan	1,695		3-	ם ע	eLuxe Touringus. Coupe	g 1,290 1,310
BARLE			2800 5-1 2915 5-1		1,725			Brougham 3 d Sp. Brough. 3 '6-50-51''	d. 1,265		80 5- 95 5-	P Se	edan	1,545
2800 5	-p Touring -p Sp. Touring	\$1,395	5-p	Crown Sedan	1,995 2,195	2600 5	-p I	Demi Sp. Tour	. \$1,220	27	75 5-	p B	eLuxe Sedan rougham	1,745 1,385
8100 5	-p Sedan -p Sp. Sedan	1.850		Brougham	1,895	2690 5	-p 8	p. Touring sedan	1,420	Je	DRDAN	p Sr	o. Brougham	1,525
BUICK	"Standard"	-,	2750 5-p 2810 5-p	Touring	1,095	2981 5	-p S	p. Sedan	1,720 1,920	80		(120	in. W. B.)	
2750 2- 2800 2-	-p Roadster -p Roadster Encl.	\$1,150   2	2830 3-р	Coupe	1,195 1,295		-p S	rougham p. Brougham	1,490 1,620	31	00 5-1	P To	ayboy Road. uring	\$1,850 1,775
2920 5-	-p Phaeton	1,175   3	2870 3-p 3040 5-p	Spec. Coupe Spec. Sedan 4 d.	1.395	2007 5-		"6-61" ouring		342	75 4-1	Br	ougham 4 d.	2,385
2970 5-			5-p	Sedan de Luxe	1,695	3380 5-	p S	edan	\$1,585 2,245	326	0 4	12414	in. W. B.) seboy Touring	2,385
3075 4-	p Coupe	1,565	930 5-p		1,545	3675 5- 3380 4-		p. Sedan rougham	2,395 1,995	358	50 4-r 55 5-r	Sec	leboy Touring	2,095 2,585
8185 5- 8245 5-	p Dbl.ServiceSedan p Regular Sedan	1.665 3	675 4-p	Volante Tour	\$2,325	3-1	•	"8-80" padster		333		Seri	yboy Road.	
	"Master	3	675 4-p	Aero-Vol Tonn	2,325	5-1	p Sp	. Touring	2,315 2,165	334	0 5-p	To	uring	2,575 2,575
8800 2-1	(120 in. W. B.)  Roadster		055 5-p 000 7-p	Brouette Sedan	3,225	7-1 7-1	Sp Se	dan Touring	2,265 2,765	352	0 4-p	Vic	ougham toria	2,875 2,775
3455 5-I	Roadster Encl.	1,400 4	100 7-p	Royal Limousine	3,225 3,325	ESSEX 2130 5-1		ouring		352 KIN		Sed	an	2,975
5-I	Phaeton Encl.	1,210 1	UNNING	HAM "V-4"		2305 5-1 FLINT	p Co	pach	\$900 1,000	342		(120 in	n. W. B.,	
3675 4-I 3845 5-I			600 7-p	Touring	\$6,300	3095 3-1	Sp Sp	"55" . Roadster		342	8 4-p	Fou	rsome	1,895
	(128 in. W. B.)	47	500 4-p	Sp. Touring Coupe	5,800 7,150	3145 5-p	To	uring	1,495	3528		Tou Cou	ring	1,595
3470 3-p 3605 5-p			000 6-p AGMAR	Sedan	7,650	3165 5-р	Sp	cl. Touring . Touring	1,675 2,050	3878 3400	5-p	Sed	an	2,200 2,400
8645 7-p	Phaeton	1,625   38	00 4-p	"6-70" Sp. Touring	3,500	3165 4-p 3355 4-p	Sp	. Touring	1,795 2,095	3400	4-p	Sedi	anette	1,495 1,995
7-p	Country Club	2.075 D	ANIELS		4,500	3470 4-p	Sec	lan	2,185	3428	2-p	(124 in	. W. B.)	
8940 5-p 4020 7-p	Brougham Sedan Sedan	2,350		"24-38"		5-p	- 4	ugham	2,735	3428 3528	4-D		rsome	1,995 1,795
7-p	Sedan Limousine 2	2,525 476	65 7-p		0,800	2400 5-p 5-p		aring cl. Touring	1,075	3645 3875	4-p	Coup	pe	1,795 2,4 <b>0</b> 0
CADILLA		2,925 460 520	00 4-p	Sedan	7,600	5-р	Bro	ugham	1,151 1,630	3400	7-p	Seda Road	I King Sedan	9 695
4190 4-p		,085 DA	VIS	**90**		FORD Without	Starte	er and Dem. R		KISS	SELL SELL	Seda	nette	2,295
4280 7-p 4200 4-p	Phaeton 3	,085 265 ,085 291		M. O'War Rd. \$1	1,495	1000 Z-D	Rur	about	\$265	2980		"5 Dhan	5"	
4270 2-p 4870 5-p	Coupe 3	,875 275	60 5-p	Phaeton	1,495	With S	tarter	ring and Dem. Rin	295 ms	3170	5-p	Phae	ton DeLuxe 1	,685 .885
4600 5-p 4610 7-p	Sedan 4	400 306	5 5-p	Sedan	.895	1540 2-p 1662 5-p	Run	about	\$350	3190 3530	5-p 2-p	lour	ster 2	,085
4480 5-p	DeLuxe Sedan 4	,585 270 ,150	00 5-р		.595	1772 2-p	Cou	pe	380 525	3430 3530	4-p	Coup	e 2	,785 ,585
1580 5-p 1640 7-p	Town Brougham 4 Limousine 4	,600 283	- 4	Roadster 1	.795 1	1898 5-p	Seds	in, Fordor in, Tudor	685 590	3530	5-p 5-p	Sedar	gham 2	,685 ,385
4640 7-p 560 7-p	Imp. Suburban 4.	500 324	5 5-p	Phaeton 1	,695	FRANKLIN 2580 5-D	J "10	C.,		3530 3530	5-p 2-p	Victo	ria 2	,685
1380 4-p		275 305	0 5-p	Brougham 1	,895 2	710 4-p	Cour	pe	\$1,950 2,750	3130 4070	2-p	Speed	ster \$2	785 185
1475 5-p		650 DO	RRIS		.295   2	780 5-p 655 5-p	Seda	in i-Sedan	2,850	4010	7-p 7-p	Sedar Berlir	- 0 :	385 485
2-р	Coupe (132 in.) \$3,	4120	0 4-p	Pasadena Tour. \$4,	150 2	765 5-p	Brou	gham	2,250 2,850	LEXI	NGTON	"Conc		
5-р	Coupe (138 in.) 4.	350 4198	8 4-p	Coupe 4.	.950 .985 G	5-p SARDNER		ing Lim.	2,950		5-p	Touri	ng \$1.	195
5-p	Sub. (138 in.) 4.0	550 4200 650 4310	5-p	Sedan 5,	550 2	520 3-р	Road	'Series 5"	945		5-p 5-p	Touri	ng (Enc.) 1,	595
7-р	Imp. Sub. (138 in.)	DOI	DGE BRO	THERS	2.	545 3-p 550 3-p	Spec.	Roadster	1,045		0-D	Sedan		695 085
ASE	J. I. C.	2653	2-p		865 2	555 5-p	Tour	ing	1,135 995		2-p	linute Roads	Man"	045
260 <b>8-p</b> 290 5 <b>-p</b>	Roadster \$1,8		5-р	Touring	895 26	610 5-p 650 5-p	Speci	al Touring	1 005		5-p 5-p	Tourin	Touring 1,9	95
5-р	Spec. Touring 2.1	2793	4-p	Coupe 1 5	995 25	590 5-p	Touri	ng "A"	1,045		5-D	Cal. 7	ouring 2.2	
570 4-p 640 5-p	Sub. Coupe 2,4	2755	2-р 8	Bus. Coupe 1,	035 26	580 5-p	Coup	Touring	1,145 1,275		7-p 7-p	Tourin	2,0	95
- D	2,5	2929		Snoa Carre		395 5-p 070 5-p	Sedar	1	1,475	-	5-p	Royal	Coach 2,4	30
					, 30	о•р	Sp. S	sedan	1,595		5-p	Brough Sedan	nam 2,5 2,8	30
													6,0	

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#### Prices and Weights of Current Passenger Car Models

			1				7							
Ship.	s. Body Style	Price	Ship Wt.		Body Style	Price	Ship Wt.		. Body Style	Price	Ship.	Page	. Body Style	Price
LINCOLN			2200	5-p	Touring	875		ENBA	CKER		3305	5-р	Touring	1,495
4050 <b>2-p</b> 4290 <b>7-p</b>	Roadster Touring	4,000	2360 2330	5-p 2-p	Sp. Touring Bus. Coupe	1,015			"C"		3600	4-p	Victoria	2,050
4290 <b>7-p</b> 4215 <b>4-p</b>	Phaeton	4,000	2000	5-p	Coach	1,045 1,065	2815 2880	8-p 5-p	Sp. Roadster Sp. Touring	\$1,645 1,595	3650	5-p	Sedan Big Six	2,150
4380 5-p	Coupe Sedan	4,600	2460	4-p	Coupe	1,175	8050	4-p	Coupe	2,095	3630	7-p	Touring	\$1,875
4375 4-p 4600 5-p	Sedan	4,900	2410 2570	5-p 5-p	Coach Sedan	1,065 1,250	3160	5-p	Sedan "A"	2,195	3770	5-p	Coupe	2,650
4660 <b>7-p</b>	Sedan	5,100 5,300	2740	5-p	DeLuxe Sedan	1,350	3325	4-p	Sport Phaeton	2,195	4130	7-p 7-p	Sedan Berline	2,785 2,860
4720 7-p	Limousine	3,000	OVE	RLAND				4-D	Coupe	2,695	STUT		"KLDH"	2,000
LOCOMOB	"48"				100 in. wheelbase	)	ROAL	5-p MER	Sedan	2,795	3600	3-p	Roadster	\$2,450
6030 4-p	Sportif Tour.	\$7,400	1769	2-p	Roadster	\$530		"6-54-	E" (118 in. W. B.	)	3700 3950	8-p	Sp. Roadster Sp. Touring	2,765
5830 7-p 5600 5-	Touring Victoria Sedan	7,400 9,990	18 <b>63</b> 1918	5-p 5-p	Touring DeLux	<b>530</b> se 595	3100 3100	2-p 4-p	Roadster Tourer	\$2,685 2,485	4100	5-p 7-p	Touring	2,790 2,640
5464 7-p	Brougham	9,990	2177	2-p	Coupe	695	3300	4-p	Sp. Touring	2,750	4050	5-p	Touring	3,115
5640 7-p 5868 7-p	Tour. Limousin Encl. Drive Lim		2130 2004	5-p 5-p	Sedan Coupe Sedan	850 685		7-p 3-p	Touring Cabriolet	2,685 3,285	4200 4300	4-p 4-p	Coupe Sp. Coupe	2,990 3,250
5624 7-p	Cabriolet	10,250	PACE		coupe becau	000		"6-54-	E" (138 in. W. B.	)		- "	"693-4"	0,200
McFARLA	N		IAU	"6"	(126 in. W. B.)		4100 4200	5-p 7-p	Spec. Sedan Suburban-Sedan	\$4,250 3,950	3250	3-р	Roadster	\$2,195
	"6" TV	8E 400	3165 3320	4-p	Roadster	\$2,785			"4-75-E"		3350 3750	5-p	Touring	2,195
4600 2-p 4600 4-p	Roadster Sport Touring	\$5,400 5,600	3255	5-p 4-p	Touring Sp. Touring	2,585 2,750	3650	4-p	Sport "4-85-E"	3,650	3130	5-p	Sedan "695"	2,850
4700 7-p	Touring	5,700	8400	4-p	Coupe	3,275	8200	2-p	Spec. Speedster	3,785	3900	5-p	Sportster	\$2,850
4900 4-p 6200 4-p	Coupe Tour. Sedan	6,720 6,720	8515 8565	5-p 5-p	Coupe Sedan	3,450 3,375	ROLI			****	3950	7-p	Touring	2,885
6200 7-p	Tour. Sedan	6,810	8610	5-p 5-p	Sedan Limousine	e 3,425	2300 2315	5-p 3-p	Touring Coupe Roadster	\$995 1,195	4150 4350	5-p 7-p	Sedan Sedan	3,600 3,750
5200 7-p 5200 7-p	Sp. Sedan Sub. Sedan	7.000	8430	7-p	(133 in. W. B.) Touring	\$2,785	2485	5-p	Sedan	1.295	4450	7-p	Berline	3,850
5100 <b>7-p</b>	Limousine	6,900	8690		Sedan	3,625	*******	5-p 5-p	Spec. Coupe Spec. Sedan	1,395 1,550	TEMP	LAR		
5200 7-p	Town Car "Light 6" SV	9,000	8765	7-p 7-p "8"	Sedan Limousine (136 in. W. B.)	e 3,675		KNIG		1,000	8800	4-p	Suburban Tour.	
8700 8-p	Roadster	\$2,600	3880	4-p	Runabout	3,850			"H"		3300	5-p 5-p	Phaeton Sedan	1,985 2,785
<b>1700</b> 5-p <b>1850</b> 4-p	Touring Coupe	2,600 3,100	3990 3930	5-p 4-p	Touring Sp. Touring	3,650 3,800	3840 3800	4-p 5-p	Sp. Roadster Touring	\$2,400 2,300		4-D	Brougham	2,650
4850 5-p	Sedan	3,100	4125	4-p	Coupe	4,550	3850	7-p	Touring	2,375	VELIE	B	"56"	
<b>3</b> 900 <b>7-р</b>	Sedan	3,200	4200 4270	5-p 5-p	Coupe Sedan	4,725 4,650	4050 4160	5-p 5-p	Coupe Club Sedan	3,000 3,050	2780	5-р	Touring	\$1,095
MARMON	440.440		4275	5-p	Sedan Limousine	e 4,700	4165	7-p	Sedan	3,250	3110	5-p 5-p	Sedan Royal Sedan	1,595 1,895
8470 2-p	"34" Speedster	\$3,295	4020	7-p	(143 in. W. B.) Touring	\$3,850	ROLL	S RO	YCE			- 1	"60"	-,
8650 4-p	Speedster	3,295 3,095	4275	7-p	Sedan	4,900			10,895. Prices o		2840	5-p	Touring	\$1,225
8575 4-p 8690 7-p	Phaeton Phaeton	3,095	4350	7-p	Sedan Limousine	e 4,950			be obtained fro field, Mass.	m rac-	3083 3340	5-p 5-6	Club Phaeton Royal Sedan	1,425 1,925
8770 4-p	Coupe	3,585	PAIG		P11	** ***	STAN				3100	5-p	Sedan	1,675
<b>8</b> 970 <b>4-p</b> <b>4</b> 155 <b>7-p</b>	Sedan Sedan	3,985 3,985	8677 8742	4-D 7-D	Phaeton Phaeton	\$1,895 1,895	8770	5-р	"740" Phaeton	\$2,750	3083	5-p	Coach Sedan	1,425
4220 7-p	Suburban	4,285	8880	4-p	Phaeton DeLuxe	2,095	3910	7-p	Phaeton	2,750	WEST	COTT	**44**	
4100 7-p 4000 7-p	Limousine Town Car	4,285 4,285	4300 3900	7-p 5-p	Sub. Limousine Brougham 4 d.	2,895 2,175	4075	5-p	Sedan	3,585	3050	5-p	Touring	\$1,690
MAXWELL		4,400	4285	7-p	Sedan DeLuxe	2,770	4170	7-p	Sedan	3,985	3150 3300	5-p 5-p	Spec. Touring Brougham 3 d.	1,840
2135 2-р	Roadster	\$885	PEER	RLESS			STAR 1700	2-p	Roadster	\$540	9000	0-p	"48"	-,
2230 5-р	Touring	895	8050	2-р	"6-70" Roadster	\$2,350	1790	5-p	Touring	540	3550	7-p	Touring	\$1,990
2410 5-p 2280 2-p	Sp. Touring Club Coupe	1,055 1,025	8175	5-p	Touring	2,285	1800 1880	5-p 5-p	Touring FWB Spec. Touring	745 795	3650	7-p	Spec. Touring	2,190
2480 5-р	Club Sedan	1,095	3525 8550	7-p 5-p	Touring Sedan	2,485 2,995	1980	2-p	Coupe	750			"60"	
2570 5-p 2785 5-p	Sedan Trav. Sedan	1,325 1,585	3700	5-p	Coupe	2,950	2115 2150	5-p 5-p	Sedan Spec. Sedan	820 1,090	3300	5-D	Sedan NTE CLAIRE	\$2,190
2785 5-p MOON	Irav. Sedan	1,000	3900	7-p	Sedan	3,295			CNIGHT	1,030		-	(121 in. W. B.)	1
	Series "A"			4	"8"—66	** ***			**4**		3240	3-p	Roadster	\$2,575
2400 4-p 2410 5-p	Roadster Sp. Touring	\$1,450 1,395	3980	4-p 7-p	Tour. Phaeton Touring	\$2,690 2,750	8775	4-p 5-p	Coupe Roadster Touring	\$1,795 1,595	3320	5-p	Touring	2,475 3,275
2625 <b>5-p</b>	Sedan 2 d	1,695	4300	5-p	Sedan	3,690	4250	5-p	Sedan	2,095	3460 3630	4-p 7-p	Coupe Sedan	3,475
2750 5-р	Sedan 4 d	1,795	4355 4430	7-p 7-p	Sedan Berline	3,840 4,090	8750	4-p 5-p	Coupe Brougham Brougham	2,095	3670	5-p	Imperial Sedan	3,575
	New York	** ***	4130	4-p	Victoria Coupe	3,390			"6"	-,	3500 3650	5-p	Brougham Limousine	3,375
2860 5-p 2920 <b>4-p</b>	Touring Coupe	\$1,595 2,035	PIER	CE-AR	ROW		8775	5-p	Touring Touring	\$2,395	8600	5-p	Town Car	3,850
2920 5-р	Sedan	2,045			"33"		8850 4025	7-p 2-p	Coupe	2,495 3,395		"B-68"	(127 in. W. B.)	
<b>8</b> 090 5- <b>p</b>	Petite Sedan	2,245	4350 4590	2-p 5-p	Runabout Touring	\$5,250 5.250	4275	4-p	Sp. Coupe	3,150	8265	4-D	Roadster	\$2,875 2,975
2850 5-р	Metropolitan Touring	1,695	4780	3-p	Coupe	5,250 6,800	4275 3950	7-p 5-p	Sp. Sedan Brougham	3,395 3,200	3335 3500	5-p 7-p	Traveler Phaeton	2,875
8120 5-p	Sedan	2,135	4830 4960	4-p 7-p	Sedan Sedan	7,000			"Light 6"		3495	4-p	Coupe	3,675
3190 5-p	Sp. Sedan	2,245	4750	4-p	Coupe Sedan	6,900		4-p 5-p	Touring Touring	\$1,875 1,875	3625 3635	5-p 7-p	Sedan Sedan	3,775
8270 5-p	London Sp. Touring	2,095	4730 4850	6-p 7-p	Brougham Limousine	6,800 7,000	*******	4-p	Sport Coupe	2,185	3570	5-p	Brougham 4-D	3,800
8590 7-p	Petite Sedan	2,885	5060	7-p	Enclosed Lim.	7,000	01090100	5-p	Coupe Broughan Sedan	2,285 2,475	3710	7-p	Limousine	3,990
NASH			4780 4732	7-p 6-p	French Lim. Landaulet	7,000	STER	5-p LING-1	KNIGHT	2,713	WILL	YS-KN		
2960 Б-р	"Special" Touring	\$1,095	3100	0-D	"80"	1,000	3200	4-p	Sp. Touring Phaeton	\$2,250	9694	0 -	"64" Roadster	\$1,275
\$120 5-p	Sedan	1,295	3385	7-p	Phaeton	\$2,895	8285 8300	5-p 7-p	Phaeton Touring	2,150 2,400	2681 2768	2-p 5-p	Roadster Touring	1,295
	"Advanced"		3440	5-p	Sedan	3,895	3200	2-p	Coupe Roadster	3,100	3062	3-p	Coupe	1,770
8-p	121 in. W. B.) Roadster	\$1,375	3625 3675	7-p 7-p	Sedan Enc. Drive Lim	3,995	8450	5-p	Sedan	2,800 3,050	3115 3111	5-p 4-p	Sedan Coupe Sedan	1,795 1,550
\$250 5-p	Touring	1,375			anc. Dive inn	. 4,040	3550 3450	7-p 4-p	Sedan • Sp. Brougham	2,750	3115	5-p	Coupe Sedan	1,650
8540 5-p	Sedan	1,695	PREM		"6-D"				URYEA		3167	5-p	Sedan DeLuxe	1,995
	"Advanced" 127 in. W. B.)		3385	7-p	Phaeton	\$2,895	4200	2-p	Roadster	\$8,150	3059	7-p	Touring	1,425
8870 7-p	Touring	\$1,525	3440 3625	5-p 7-p	Sedan Sedan	3,895 3,995	4400 4250	7-p 4-p	Touring Sp. Touring	7,500 7,750	3431	7-p	Sedan	2,095
8670 7-p 8620 4-p	Sedan Coupe	2,290 2,190	8675	7-p	Enc. Dr. Sedan		4600	4-p	Coupe	9,000		T	AXICABS	
		-,100	3360	4-p	Coupe		4600 4800	4-p 6-p	Sedan Sedan	9,675	Weight	t	Make and Model	
OAKLAND	"6-54"	21 005	REO		"T-6"		4800	6-p	Town Brougham	10,175	4100 2200		Checker Driggs	\$2,340 1,950
	Roadster	\$1,095 1,195	8172	5-p	Sta. Touring	\$1,395	4800 4800	6-p 7-p	Vestibule Limou. Vestibule Limou.		3415		Elcar 4	2,100
2420 <b>3-p</b>	Sp. Roadster	1,095	8182	5-p	Sport Touring	1,595	4800	7-p	% Limousine	10,175	3590		Elcar 6	2,450 1,925
2420 <b>3-p</b> 2510 <b>3-p</b> 2485 <b>5-p</b>	Sp. Roadster Touring		8325	4-p 5-p	Coupe Sedan	1,875 1,985	4800	7-p	Cabriolet	19,175	8500 8800		Kelsey E Pennant	2,895
2420 <b>3-p</b> 2510 <b>3-p</b> 2485 <b>5-p</b> 2550 <b>5-p</b>	Touring Sp. Touring	1,195	8516	W-W		2,235	STUD	EBAK			3850		Premier 4A	2,890
2420 <b>3-p</b> 2510 <b>3-p</b> 2485 <b>5-p</b> 2550 <b>5-p</b> 2620 <b>3-p</b>	Touring Sp. Touring Landau Coupe	1,295	8515 8695	5-p	Brougham 4 d.			(63	tenderd wir				Tromitor are	
2420	Touring Sp. Touring Landau Coupe Coupe Sedan	1,295 1,495 1,545		5-p		-,	2510		tandard Six Roadster	\$1,125	3200		Rauch & Lang T	
2420	Touring Sp. Touring Landau Coupe Coupe Sedan Landau Sedan	1,295 1,495	8695 REVE	5-p RE	"M"		2510 2650	3-p 5-p	Roadster Touring	\$1,125 1,145	3200 3672 3575		Rauch & Lang T Reo V Traveler	2,350 2,185 2,600
2420	Touring Sp. Touring Landau Coupe Coupe Sedan Landau Sedan LE	1,295 1,495 1,545	3695 REVE 3700	5-p RE 2-p	"M" Roadster	\$3,200	2650 2955	3-p 5-p 5-p	Roadster Touring Coupe	1,145 1,495	3672 3575		Rauch & Lang T Reo V Traveler White 15A	2,185 2,600
2420 <b>8-p</b> 2510 <b>8-p</b> 25485 <b>5-p</b> 2550 <b>5-p</b> 2620 <b>3-p</b> 2720 <b>4-p</b> 2860 <b>5-p</b> 2885 <b>5-p</b>	Touring Sp. Touring Landau Coupe Coupe Sedan Landau Sedan	1,295 1,495 1,545	8695 REVE	5-p RE	"M"		2650	3-p 5-p 5-p 5-p	Roadster Touring	1,145	3672		Rauch & Lang T Reo V Traveler	2,185 2,600

# Current Passenger Car Specifications (This list comprises cars distributed on a national basis)

					(T	his list	comp	2718	es c	ars	di	stribi	ite <b>d</b>	on a	nation	at ba	818)	1		1				
		TH	RES				ENGIN	IE .						trical tem	Clutch	Gear-	Uni- versal Joints	REAR AXLE		E BRAKES			Steer- ing Gear	Rea- Springs
MAKE AND MODEL	Wheelbase (Ins.)	Standard Size (Ins.);	Balloon Equipment	Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carbureter Make	Ignition System Make	Generator and Starter Make	Type and Make	Make	Type and Make	Type and Make	Gear Ratio;	Foot, Type and Location	Hand, Type and Location	Four Wheel Brake Type	Make	Type and Length
Anderson	115 122 120 130 114	32x4 32x4 32x4 33x5	No Yes* Yes* Yes* No Yes* Yes	H-Sp Cont Cont Own Own Cont Lye	7U 8R 6 8	6-31/2x5 6-31/8x41/4 6-33/8x41/2 6-31/8x41/4 8-31/8x41/4 8-31/8x41/4	29.40 23.44 27.34 23.44 33.80 23.44 31.25	L L L L L L	0000000	3 3 4	PS PC PC PS PS PC PC	Str Zen Zen Str Joh Str	A-K Wes Rem Rem Rem Rem	G-D Wes Rem Rem B:j Rem	P-B&B P-B&B P-B&B P-Roc D-Own P-B&B P-	Mec Mec	M-Har F-Thi F-Uhi M-Thi M-Thi M-Uni	F-Sal 1/2 Sal 3/4 Sal 1/2 Col 1/2 Own 1/2 Col	5.10	E-R	I-R E-T E-T I-R I-R E-T E-T	None Mec* Mec* Mec* Me * Mec*	Own Jac	5-571/4 5-58 5-58 J-48 J-48 S-57 S-57
	118 1143/8 {120 {128	32x4 31x4,7 32x5.7		Cont Own Own	Sta	6-3 x41/2	21.60	L I I	CCC	4 4 4	PC PS PC	Str Mar Mar	Del Del Del	De Del Del	D-Own	Own	R-M&E M-Own M-Own	1 ½ Col 34 Own F-Own	5.11 4.90 {4.73 4.54		I-R I-R I-R	None Mec Mec	Jac	S-56 V-48 V-475%
Case         X           Case         JIC           Case         Y           Chalmers         Y           Chalmers         Y           Chandler         SS	122 132 117 122	32x4½ 32x4½ 33x5 32x4 33x4½ 33x6.0	Yes* No No	Own Cont Cont Cont Own Own Own	8R 8R 6T 6	8-31/8x51/8 6-33/8x41/2 6-33/8x41/2 6-33/4x5 6-31/4x41/2 6-31/4x41/2 6-31/2x5 4-31/8x4	27.34 27.34 33.75 25.35	L L L L L L	CCCCAACC	4 4 3 3 4	PC PC PC PS PS PC PS	Own Sch Sch Str Str Str Sch Zen Hol	De Del Del Del A-L A-L Bos Rem	Del Del Del Del A-L A-L Bos Rem		Own Own Own War War Own	M-Spi R-Sne R-Sne R-Sne M-Mec M-Mec M-The M-Own	F-Own 1/2 Col 1/2 Col 3/4 Col 1/2 Tim 1/2 Ti 1/2 Own	4.90 4.90 4.45 5.13 5.13 4.45	E-R	I-R I-R I-R I-R I-R I-R I-R I-R	Mee Hyd Hyd Hyd Hyd Hyd* Mec* None	Own Jac Lav Lav Gem Gem Own	N-54 S-55 S-8434 S-57 S-56 S-56 S-5834 Q-28
Chrysler. Six Cleveland. 43 Cole Master Crawford .6-70 Cunningham V4	115 4	30x5.7 31x5.2 20x7.3 33x4½ 33x5	Yes Yes*	Own Own Nort Cont Own	311 6T	6-3 x434 6-31/8x434 8-31/2x41/2 6-35/6x51/4 8-33/4x5	21.60 23.44 39.20 31.54 45.00	L L L L	A C A C C	3 4	FP PC PC PC PC FP	Str Sch Sch Zen Str	Rem Bos Del Wes Del	Rem Bos Del Bos Del	D-Own P-B&B D-Nor D-B-L D-Own	Own Nor B-L	M-Own R-Sne M-Spi M-Spi R-Sne	1/2 Own 1/2 Own F-Col 1/2 Tim F-Tim	4.90 4.10 5.00	E-F E-R E-R E-R E-R	E-T E-T I-R I-R I-R	Hyd Mec* None None None	Jax CAS Gem Lav Gem	S-51½ S-53 S-57 S- J-62
Dedge Brothers Dorris Dart Duesenberg Straight C	138 138 115 118 116 132 115 134 124	33x5 31x4 32x4 <sup>1</sup> 6 30x5.7 32x5 31x4 33x5 32x4 <sup>1</sup> 6	No Yes* Yes* Yes* Yes* Yes* No No Yes*	Cont Own Cont Cont Own Fall Own H-Sp Cont	6-80 T8000	6-35/x51/4 6-35/xx51/4 6-35/xx41/4 6-38/xx41/2 4-37/xx41/2 6-4 x5 6-31/xx41/4 8-27/xx5 6-31/xx5 6-31/xx5 6-31/xx5	31.54 39.20 23.44 27.34 24.03 38.40 23.41 26.45 29.40 24.03	L L L L I I I I I	C C C A C C A C A	3553733	PC PC PC PS PC PC PC PC PC PC PC	Zen Zen Str Str Ste Str Car Str Str Til	Wes Del Del Del N.E Bos Bos Del Wes A-L	Bos Del Del Del N.E Bos Bos Del Wes A-L	D-B-L P-Own P-B&B P-B&B D-Own D-Own D-Dtl P-Own D-B-L P-Own	Own W-G W-G Own B-L Own	M-Spi	1/2 Tim F Tim 1/2 Tim 1/2 Tim 1/2 Own 1/2 Tim 1/2 Own 1/2 Tim 1/2 Own 1/4 Ad	3.10 4.66 4.90 4.45	E-R E-F E-F E-R E-R E-R E-R E-R	I-R I-R I-R I-R I-R I-R I-R I-R I-R I-R	None None Hyd Hyd None None Hyd None Mec*	Ros Ros Own Ros Gem Lav Jac War	S-52 S-52 S-55 S-60 V-50 S-59 S-58 S-50½
Elcar ,6-41 Elcar ,6-51 Elcar ,6-61 Elcar ,8-80 Essex 6	$\begin{array}{c} 112 \\ 113 \\ 118 \\ 127 \\ 110^{+}2 \end{array}$	31x4 31x4 32x4 32x6.2 31x5.2	No Yes* Yes Yes	Lyco Cont Cont Lyc Own	8R 8	4-35%x5 6-31%x41/4 6-33%x41/2 8-31/6x41/4 6-216x41/4	21.03 23.44 27.34 31.25 17.32	L L L L L	A C C C A	4 5	PC PC PC PS Sp	Zen Str Str Str Str	A-L A-L Del Del Bos	A-L A-L Del Del Bos	P-B&B P-B&B	W-G W-G	M-Mec M-Mec M-Har M-Spi M-Spi	1/2 Sal 1/2 Sal 3/4 Sal 1/2 Sal 1/2 Own	4.70 4.70 4.70 4.71 5.60		E-T F-T I-R E-T I-R	Mec* Mec* Mec* Hyd None	Ros Ros Ros Own	S-51 E-51 S-52 S-58 S-54\2
Flint	120 100	30x5.2 32x4½ 30x3½ 32x4.9	Yes* No	Cont Cont Own	40	6-31/8x41/4 6-33/6x5 4-33/4x4 6-31/4x4	23.44 27.34 22.50 25.35	L I L	CCC	7 3	PC PC Sp PC	Til Str {Own  Hol Str	A-L DeJ Own	A-L DeJ Own A-K		War War Own	M-Spi M-Spi M-Own M-Spi	1/2 Ad 1/2 Ad 1/2 Own 1/2 Own	4.77 4.77 3.63 4.73		E-F I-R I-R IE-R	Mec* Mec* None	War War Own	S-50 S-54 O-43½ E-38
Gardner Series 5 Gray 0			Yes*	Lyco	CE R	4-316x5 4-358x4	21.76 21.03	L	A		PC Sp	Zen Sco	Wes Wes	Wes Wes	P-B&B P-Own	Mec Det	M-Pet R-Sne	34 Fli 12 Tim	4.80	I-R I-R	I-R I-R	None None	Ros Own	S-51 Q-30
H.C.S Series 4 H.C.S Series 6 Hatfield 6-55	120 126 121 121 121	32x4 1 2 32x5 32x4 33x5 . 7 33x6 . 2	No Yes* No Yes	Weid Own H-Sp Own Own	Spec 40 60	4-384x5½ 6-3½x5 6-3½x5 6-3½x45 6-3½x434 6-3½x5 4-3½x5	22.50 29.40 25.35 29.40 29.40 16.90	I I L L L	CCCCAC	3 3 3 3	PS FP PS PS PS PC	Str Str Str Ray Ste Str		Del Del Bos L-N Bos Wes	D-B-L D-B-L P-B&B D-Own D-Own	B-L B-L Dur Mec Own	M-Spi M-Spi M-Spi M-Thi M-Spi R-Own	14 Own 34 Own 12 Col 14 Own F Tim 34 Own	4.63 4.63 4.63 4.41 4.45	I-R I-R	I-R I-R I-R I-R E-T I-R I-R	None None None None None None	Gem Gem Gem Jac Gem Ros	S-56 S-58 S-54!4 S-58 S-56!2
Jordan		32x4 .9 32x4 32x4 1/2 32x6 .2	Yes*	Own Cont	6 Spec Spec	6-31/4x5 6-35/6x43/4 8-3x43/4	25.36 26.34 28.60	L L	C C	3 4 5	PC PC	Ray Str Str	A-K Del Bos	Rem Del Bos	D-Lon P-Det P-Det	W-G Det Det	M-Mec M-Thi M-Thi	1/2 Tim 1/2 Tim 1/2 Tim	4.45 4.45 4.54	I-F	E-T	None Hyd Hyd	Gem Gem Gem	S-55 <sup>3</sup> / <sub>4</sub> S-55 <sup>3</sup> / <sub>4</sub>
KingL&K	124	32x4½ 32x4½		Own Own	L 55	8-3 x5 6-3%x51/8	29.80 26.34	L	C	3	PS PC	Bal Str	A-K Rem	Wes Rem	D-Det P-B&B	Own W-G	R-Uni M-Spi	F Col 34 Tim		E-R E-R	I-R E-T	None Hyd*	Jac Jac	S-40 S-56
Lexington	123 136	32x5.2 33x5	Yes* Yes Yes* No	Anst Anst Own Own	M F 8	6-356x41/2 6-356x51/4 8-33/8x5 6-41/2x51/2	26.30 26.30 36.45 48.60	I L T	C C A C	3 5	FP FP PC PC	Ray Ray Str Bal	Con Con Del Del	Bos Bos Del Wes	D-Own	W-G W-G Own Own	(R-Pic (R-Sne M-Spi M-Spi	1½ Sal	4.58	E-R E-R E-R E-R	E-T E-T I-R I-R	None None None Mec	Ros Ros Own Own	{S-56 {S-59 S-59½ J-50
Marmon. 34 Maxwell. 25 McFarlan. SV McFarlan. TV	109 127	32x4½ 31x4 32x4½ 33x5	Yes*	Own Own Wis Own	25	6-334x51/8 4-35/8x41/2 6-33/8x5 6-41/2x6	33.75 21.03 27.34 48.60	I L I T	A A A		FP PS FP FP	Str Ste Ray Ray	Del Rem Del Wes	Del Rem Wes Wes	D-Lon	W-G	M-Spi M-Own M-Pet R-Sne	34 Own 12 Own 12 Tim F Tim		E-R E-R E-F E-R	I-R E-T E-T I-R	Mec* None Hyd Hyd*	Own Own Ros Ros	O-45 S-56 S-59 S-64
Moon Newport Moon Metropolitan Moon London Moon Series A	118 128	31x5.2 31x5.2 32x6.2 30x5.2	Yes Yes	Cont Cont Cont Cont	7U 7C 8R 7Z	6-31/8x41/4 6-31/4x41/2 6-33/8x41/2 6-31/8x41/4	23.44 25.35 27.34 23.44	L L L	CCCC	4 4 4 4	PC PC PC PC	Str Str Str Zen	Del Del Del Del Del	Del Del Del Del		W-G W-G B-L W-G	M-Spi M-Spi M-Spi M-Spi	12 Tim 12 Tim 12 Tim 12 Tim 12.Tim	5.10 5.10 5.09 4.70	E-R E-R E-R E-R	E-T E-T I-R E-T	Hyd Hyd Hyd Hyd Hyd	Ros Ros Ros Ros	S-54 S-54 S-55 S-54
Nash "Advanced"  Nash "Special"	121 127 1121/2	33x6.0 31x5.2		Own Own	Adv Spe	6-31/4x5 6-31/8x41/2	25.35 23.44	I	C B	3	PC PC	Mar Mar	Del Del	Del Del	P-B&B P-B&B	Own Own	M-Own	1/2 Own	${4.50} \ 4.90 \ 4.90$	B-F	E-T E-T	Mee Mee	Gem Gem	S-56½ S-53¾
Oakland	113 110 (100 ) 106	31x4.9 31x4 30x318 31x5.2	Yes* Yes* No Yes	Own Own Own	6-54 30 91	6-27/8x43/4 6-23/4x43/4 4-31/2x4	19.84 18.15 19.60	L L L	B C C	3 3 3	PC PC Sp	Str Zen Til	Rem Del A-L	Rem Del A-L	P-Hoo P-B&B P-B&B	Mun Mun Own	M-Mec R-Own M-Own	12 Own 12 Own 12 Own 12 Own	5.10 5.10 4.50	E-F E-R E-R	E-T E-T I-R	Mec None None	Jac Mua Own	S-521/2 S-103/4 O-15 S-54
Packard 126&133  Packard 136&143	11133	33x41 §	Yes*	Own	8	6-33/8x5 8-33/8x5	27.34 36.45	L	C	9	PC	Own	Del Del	Dyn Dyn	D-Own	Own Own	M-Spi M-Spi	1/2 Own		B-F	I-R I-R	Mec	Own	S-54 S-54

For abbreviations see page 48.

561/6

WEED CHAINS



BALLOON TIRES

#### **Current Passenger Car Specifications**

(This list comprises cars distributed on a national basis)

		TIR	ES				ENGIN	E						rical tem	Clutch	Gear- set	Uni- versal Joints	REAR	AXLE	1	BRAKE:	S	Steer- ing Gear	Rear Springs
MAKE AND MODEL	Wheelbase (Ins.)	Standard Size (Ins.);	Balloon Equipment	Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carbureter Make	Ignition System Make	Generator and Starter Make	Type and Make	Make	Type and Make	Type and Make	Gear Ratio;	Foot, Type and Location	Hand, Type and Location	Four Wheel Brake Type	Make	Type and Length
Paige	131	33x4½ 33x6.2		Cont Own		6-3%x5 6-3½x5	33.75 29.40	L L	C	4 7	PC PC	Ray Joh	A-K Del	Rem Del	D-Lon D-Own	W-G Own	M-Mec M-Spi	1/2 Tim 1/2 Tim		E-R E-F	I-R I-R	None Hyd	Gem Gem	S-6134 S-54
	133 128 138	33x5	Yes* No	Own Own	66	8-3 <sup>1</sup> / <sub>4</sub> x5 6-4 x5 <sup>1</sup> / <sub>2</sub>	33.80 38.40	L T	C	3	PC FP	Bal Own	Del Del	Del Del	D-Own D-Own	Own Own	M-Spi ∫M-Spi	34 Tim 12 Own	4.90 4.29	E-R E-R	I-R I-R	Hyd* Mec*	Gem Own	S-60
Pierce-Arrow"80"	130	32x5.7 32x4½	Yes	Own	"80"	6-3½x5	29.40 27.34	L	C	7 3	PC PC	Own Str	Del Del	Del Del	P-B&B P-B&B	B-L Own	\R-Goo M-Spi M-Blo	1.2 Tim 3.4 Col	4.45 4.70	I-F E-R	I-R I-R	Mec Mec*	Gem Own	S-561 2 S-571 2
R&V Knight	124	32x412	No		Kni	6-3½x4½ 6-3½x5	29.40 24.34	X	C	4	PC PS	Str Seh	A-L NE	A-L NE	P-B-L	B-L Own	M-Spi /M-Own	1 2 Tim 1/2 Own	5.40	E-R E-R	I-R I-R	None None	Jac Own	S-61 S-/541/2
RevereM RickenbackerC RickenbackerA Roamer6-54-E	131 117	32x4½	Yes* Yes* Yes*	Mons Own Own	4 C A	4-4 <sup>3</sup> / <sub>8</sub> x6 6-3 <sup>1</sup> / <sub>8</sub> x4 <sup>3</sup> / <sub>4</sub> 8-3 x4 <sup>3</sup> / <sub>4</sub> 6-3 <sup>1</sup> / <sub>2</sub> x5 <sup>1</sup> / <sub>4</sub>	30.63 23.44 28.60 29.40	H L L	A C	2 3 9 3	PS PC PC PS	Str Str Zen Str	Bos Bos Del	Wes Bos Bos	D-B-L D-Own D-Own	B-I, W-G W-G	R-Own M-Spi M-Mec M-Mec	34 Stn 12 Own 12 Own 34 Tim	3.44 4.63 5.10	E-R I-F I-F E-R	I-R E-T E-T I-R	None Mec Mec Mec*	Gem Gem Gem Jac	(55)4 8-58 8-57 8-59 V-5594
Roamer	128 128 112	32x4½ 31x5.2	No	Dues Own Own	G1 G	4-4 <sup>1</sup> / <sub>4</sub> x6 4-3 <sup>1</sup> / <sub>4</sub> x4 <sup>1</sup> / <sub>2</sub> 6-4 <sup>1</sup> / <sub>2</sub> x4 <sup>3</sup> / <sub>4</sub>	28.90 16.90 48.60	H L L	A A A	3 4 7	FP PC FP	Str Til Own	Bos Con Bos	Dyn	D-B-L P-B&B K-Own	B-L Mun Own	R-M&E R-Sne M-Own	34 Tim 12 Sal F Own		E-R E-F I-R	I-R E-F I-R	Mec* Mec None	Jae Ros Own	V-5534 O-4612 V-5412
Stanley	102 119	33x5.7 30x4.9 33x4½ 33x5	Yes		750 Spec Kni Kni	2-4 x5 4-3½x4¼ 4-3¾x5½ 6-3¼x5	13.00 15.63 22.50 25.35	X X X	CCCC	2 3 4 4	PS PC PC	Non Til Sch Joh	Non A-L A-K A-K	Bij A-L A-L A-L	Non P-Own D-Own D-Own		Non M-Spi R-Cli R-Cli	12 Own 34 Ad 12 Own 12 Own	4.87 4.50	E-R E-R E-R E-R	I-R I-R I-R I-R	None Mee* Hyd* Hyd*	War Own Own	X-493 <sub>2</sub> V-50 V-50
Sterling-KnightG	125 138		Yes* No	Own Own	Kni G	$6-3\frac{1}{4}x4\frac{5}{8}$ $6-4\frac{7}{16}x5\frac{1}{2}$	25.35 47.25	X L	CC	7 4	FP PS	Str Str	Wes Bos	Wes Bos	D-Ful D-B-L	Ful B-L	R-Cli M-Spi	14 Tim F Tim	4.66 3.76	E-R E-R	I-R I-R	Mec* None	Ros Ros	S-58 S-57) 2
StudebakerSta. Six	113	35x5 31x5.2	Yes	Own	EM	6-33/8x41/2	27.34	L	C	4	PC	Str	{Wag Rem	Wag Rem	P-Own	Own	R-The	½ Own	4.60	E-R	I-R	Hyd*	Own	-50
StudebakerSpec. Six		32x6.2		Own Own	EK	6-3½x5 6-3½x5	29.40 36.04	L	C	4	PC	Str Bal	Rem Wag	Rem Wag	P-Own P-Own	Own	M-Spi M-Spi	12 Own	4.36 3.69	E-R E-R	I-R I-R	Hyd*	Own	-56 -56
Studebaker         Big Six           Stutz         693-4           Stutz         KLDH           Stutz         695	127 120 130 130	32x4½ 32x4½ 32x4½	Yes* No	Own Own Own	691 KLDH 691	6-3½x5 4-4¾x6 6-3½x5	29.40 30.63 29.40	I T I	CCC	3 3 3	PC PC PC	Str Str Str	Rem Rem Del Rem	Rem Rem Rem Rem	P-B&B D-W-G P-B&B	W-G Own W-G	M-Mec M-Har M-Mec	12 Tim 12 Own 12 Tim	5.10 3.75 4.90	E-R I-R E-R	I-R I-R I-R	None None Hyd*	Gem Gem Gem	S-611 <sub>2</sub> S-60 S-611 <sub>2</sub>
Templar	122	33x4	No	Own		6-33/8x5	27.34	L	C		PS	Ti	Dyn	Dyn	P-M&E	W-G	R-Sne	34 Sal	5.10	[-F	Е-Т	Mee	Ros	8-54
Velie	118	31x5.2	Yes	Own	50	6-34x41/4	24.38	I	C	4	FP	Str	Wes	Wes	P-B&B	Mun	M-Thi	½ Own	5.10	E-F	E-T	Hyd	Ros	8-55
Westcott       48         Westcott       44         Westcott       66         Wills Ste. Claire       A&B68	120 118	32x4½ 32x4½ 32x4 32x4 32x4½	Yes* Yes* Yes*	Cont Cont Cont Own	8R 8R 8R {A68 B68	6-3½x5¼ 6-3¾x4½ 6-3¾x4½ 8-3¼x4	29.40 27.34 27.34 33.80	L L L	A C C C	3 4 4 3	PS PC PC FP	Ray Str Str Zen Sch	Del De Del De	Del Del Del Del	P-B&B P-B&B P-M&E P-Own	B-L W-G W-G Own	M-Pet M-Pet M-Pet M-Spi	1/2 Tim 1/2 Col 1/2 Col 1/2 Eat	4.45 4.90 4.63 4.45	E-R E-R E-R /E-R /E-F	I-R E-T E-T [I-R I-R	Mec* Mec* Mcc* None Hyd	Gem Gem Own	\$-59 \$-57\2 \$-56 \$-54\} \$-58
Willys Knight64&67	1118	33x4.9 33x5.7	Yes	Own	64	4-35/8x41/2	21.03	X	C	3	PS	fil	A-L	A-L	D-Own	Own	R-Own	34 Own	${4.44} \\ 5.12$	È-R	1-10	None	Own	5-55
									T	A	X ]	[C]	A B	$\mathbf{S}$										
Checker		33x4½		Buda	WTU	4-3%x51/8		L	C	3	PC	Zen	Sci	Wes	D-Ful	Ful	Blo	34-Col	4.87	E-R	I-R	None	Jon	8-57%
Driggs		30x3½		Own	CF	4-25/8x4½ 4-35/8x5	11.03 21.03	L	C	5	PS	Car	Bos A-L	Bos A-L	D-Ful P-B&B	Ful Mun	Spi Pet	34 Own 34 Sal	4.74	E-R E-R	I-R I-R	None	Own	8-51
Elcar	118 118	33x4½ 33x4½		Cont	8R	6-33/8x41/2		L	Ĉ	4	PC	Str	Del	Del	P-B&B	W-G	Spi	34 Sal	4.75	E-R	1-12	None	Gem	S-52
KelseyE			No	1	СН	4-3½x5	19.60	L	A	5	PC	Zen	Bos	Bos	P-B&B	W-M	M-Spi	34 Sal	5.10		I-R	None	Lav	8-55
Premier		33x4½ 33x4½	No No		WTU	4-3 <sup>3</sup> / <sub>4</sub> x5 <sup>1</sup> / <sub>8</sub> 4-3 <sup>3</sup> / <sub>4</sub> x5 <sup>1</sup> / <sub>8</sub>	22.50 22.50	L	B	3	PC PC	Zen Zen	Bos Bos	Wes Bos	D-Ful D-Ful	Ful Ful	Blo Blo	34 Col 34 Col	4.87	E-R E-R	I-R I-R	None None	Jon Ros	5-57 5-571/2
Rauch & LangT Rauch & Lang** ReoV	102	32x4 33x4½ 33x4½		Buda Own Own	WTU T-6	4-334 x51/ <sub>8</sub> Electric 6-3 <del>18</del> x5	22.50 24.30	L G	B A	3	PC PS	Zen	Bos N-E	Dyn† N-E	P-Det None D-Own	Det None Own	Spi Own Own	1/2 Sta Own 1/2 Own	5.10 8.60 4.70	E-R E-R	E-T I-R	None None None	Gem Own	S-59½ S- S-55
Traveler			No		WTU	4-33/4 x51/8		L	B	3	PC	Zen	Eis	Eis	D-T-L	W-M	Spi	Col		E-R	I-R	None	Geni	8-
White	119 118	34x4½ 32x4½		Own Own	64	4-334x51/8 4-35/8x41/2	22.50 21.03	X	C	3	Sp PS	Zen Til	Opt A-L	Opt A-L	P-Own D-Own	Own Own	Own	1/2 Own 3/4 Own			I-R I-R	None None	Own Own	J- S-55
Yellow O-4		32x4½ 29x4½	No Yes	Cont Cont	V7 V7	4-3 <sup>3</sup> / <sub>4</sub> x5 4-3 <sup>3</sup> / <sub>4</sub> x5	22.50 22.50	L	C	3 3	PC PC	Zen Zen	Bos Bos	N-E†	D-B-L D-B-L	B-L B-L	Spi Spi	34 Tim 34 Tim	4.90 4.90	E-R E-R	E-T E-T	None None	Gem Gem	56 56

ABBREVIATIONS—
\*\*\*—Electric

†—Generator only
\*—At extra cost

‡—On Phneton models

A—Aluminum

Anst-Absted

Ad—Adams

A-K—Atwater-Kent

A-L—Auto-Lita

B—Semi Steel

Bal—Ball & Ball &

D—Multiple Disk
Del—Delco
Det—Detroit
De J—De Jon
Dit—Ditwiller
Doo—Dooley
Dtl—Detlant
Dues—Duesenberg
Dur—Durston
Dyn—Dyneto
E—Full Elliptic
E-F—External Four Wheels
E-R—External Transmission
Eat—External Transmission
Eat—Eaton
F—Full Floating
Fail—Full Pressure to all bear
ings including wrist pins
Ful—Fuller
1/2 F—Semi-Floating
3/4 F—Three-Quarter Floating
G—Head and Side
G-D—Gray & Davis
Gem—Gemmer G-I.—Grant-Lees
Goo—Goodrich
H—Horizontal
Har—Hart
Hol—Holley
Hoo—Hoosler
H-Sp—Herschell-Spillman
Hyd—Hydraulic
I—In Head
I-F—Internal Four Wheels
I-R—Internal Rear Wheels
J—Three-Quarter Elliptic
Jac—Jacon
Joh—Johnson
Joh—Johnson
Joh—Johnson
Joh—Johnson
Joh—Long
Kin—Kingston
L—L Head
Lav—Lavine
Lon—Long
I.—N—Leece-Neville
Lyco—Lycoming
Mar—Marvel
M—Merai
M&E—Merchant & Evans

M-Metai M & E-Merchant & Evans

Mec-Mechanics
Mons-Monson
Mun-Muncle
N-Platform
Non-None
N. E.—North East
Nor-Northway
O-Special Type
Opt-Optional
P-Single Plate
and connecting rod bearings
Pen-Penfield
Pet-Peters
Pic-Pick
PS-Splash with Pressure
Q-Quarter Elliptie
R-Fabric
Ray-Rayfield
Rem-Remy
Roc-Ross
S-Semt Elliptie
Sal-Salisbury
Sch-Schebler
Sel-Schetilla

Sco—Scoe
Sne — Snend
Sp—Circulating Splash
Spe—Bpecial
Spl—Spicer
Spl—Spicer
Spl—Spicer
Spl—Spicer
Spl—Spicer
Spl—Spicer
Spl—Spicer
Spl—Spicer
Spl—Spicer
Sple—Spicer
Spicer
S

N-491<sub>2</sub> V-50 V-50

S-571<sub>2</sub>

~50 ~56 ~56

S-61]<sub>2</sub> S-60 S-61]<sub>2</sub> S-54

N-55

\$\.59 \$\.57\\\2 \$\.56 \$\.54\\2 \$\.58 \$\.55\$

S-57%

S-55

5-57 5-571/2

S-55 S-55

J-⊱55

# We'll Tell the World

through the

# Saturday Evening Post

What every car distributor should know about



—and the value of a Davis distributing franchise

# Here are the facts—as they will appear in the Saturday Evening Post—read them:

Today's Davis is the product of twenty-three years of successful manufacturing experience.

Davis owes no man an overdue dollar—Davis has not borrowed money for years.

Davis stock is owned by a small group of original stockholders, all of whom are actively connected with the business—Davis is strictly a closed corporation with no stock for sale.

The Davis Company has always been guided by the same ownership and executives.

Davis is one of America's strongest independent motor car manufacturers.

This is a LIVE proposition, for live distributors. A great line of cars, backed by a strong independent manufacturer.

Write-orWire-Today

GEORGE W. DAVIS MOTOR CAR COMPANY - - RICHMOND, INDIANA

Permanent roads are a good investment —not an expense

# Road Building Far Behind the Automobile

Millions now recognize the automobile as a necessity. It is no longer a luxury for the few. Sixty per cent of its use is for business.

Because of this the modern paved highway has become an economic necessity.

Yet although the mileage of Concrete Roads and Streets has been steadily increasing, our highway system today lags far behind the automobile. The great majority of our highways are as out of date as the single-track, narrow gauge railway of fifty years ago.

Such a condition not only seriously handicaps the progress of the automobile as a comfortable, profitable means of transportation, but also holds back commercial, industrial and agricultural advancement in practically every section of the country. It is costing taxpayers millions of dollars annually.

Highway building should be continued and enlarged upon.

Your highway authorities are ready to carry on their share of this great public work. But they must have your support. Tell them you are ready to invest in more and wider Concrete Highways now.

#### PORTLAND CEMENT ASSOCIATION

A National Organization to Improve and Extend the Uses of Concrete

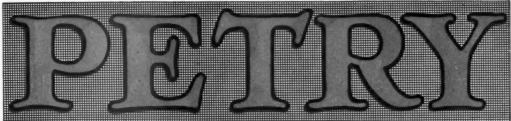
York

Atlanta Dallas
Birmingham Denver
Boston Des Moines
Charlotte, N.C. Detroit

Jacksonville Mi Kansas City Ne Los Angeles Ne Memphis Ol

Parkersburg
Philadelphia
Pittsburgh
Portland, Oreg.
Salt Lake City

San Francisco
Seattle
St. Louis
Vancouver, B. C.
Washington, D.C





You can safely go the limit-

#### Features of the PETRY DASH CONTROLLED Tuning-Up VALVE

Quality construction and scientific design. Good for years of service without trouble. Valve tongue and seat machined for tight closure.

The Valve Tongue cannot open accidentally or flutter because the lever locks in closed position.

Easy, inexpensive installation—a rigid, noiseless, leak-proof exhaust line, and a neat, handsome job at the dash.

The spring is eliminated. The valve operates smoothly with a uniform 1½-inch pull. A quarter turn of the control handle locks it at the dash in any position.

#### **PRICES**

Ford Type with special Ford dash control, com-	
plete	\$4.00
Special Chevrolet	4.75
1½ inch	5.00
15/8 and 13/4 inch	5.50
17/8 and 2 inch	6.00
21/8 and 21/4 inch	6.50

# When You Speak of PETRY Performance

Scientific design and quality construction guarantee that the PETRY will give your customer the service you claim.

You will find that PETRYS will net you a larger percentage of sales because PETRY features will make it easier for you to convince motorists of the usefulness of a cut-out as an indicator of engine condition.

Most Jobbers carry PETRYS

N. A. PETRY COMPANY, Inc. 340 N. Randolph St., Philadelphia, Pa.

Pacific Coast Representative, Norman Cowan Co. 451 Rialto Bldg., San Francisco



Juning Wally Ce

# The BOSCH

SHOCK ABSORBER





BOSCH IGNITION SYSTEM FOR FORDS TYPE 600

Insures quick, easy starts, clean plugs, added power. Has automatic spark advance—is waterproof. Prevents all ignition troubles. Price, \$12.75.



BOSCH ELECTRIC WINDSHIELD WIPER

An absolutely reliable automaticleaner that is operated electrically Not affected by engine speeds. Put no burden on the battery. Price



BOSCH RED SPARK PLUGS

The big sure firing, gas tight plu with the unbreakable insulator and the real nickel electrodes. Get the genuine—it's red! Regular size

# LongLine

# When You Can't Sell Cars Sell Accessories—

Thousands of dealers who find it difficult to sell cars at this season can make substantial profits selling accessories.

They can not only maintain their sales force, but they can make it pay its way and in the meantime uncover many new "car prospects" and help their car sales, too—

Try this plan. Specialize on the Bosch Long Line—especially the Bosch Shock Absorber. It is a real necessity of recognized value and quality.

Wire the nearest Bosch Branch for a sample set at quantity prices C. O. D., and try them on the car you sell. That will enable you to demonstrate to yourself—and to your customers—what a wonderful improvement they make.

#### AMERICAN BOSCH MAGNETO CORP.

Main Office and Works-Springfield, Mass.

Branches:

New York

Chicago

Detroit

t San Francisc

DEALERS: Big advantages open to live dealers who can become Bosch Sales Agents and sell the Bosch Long Line of Automotive Necessities.



Provides Bosch High Tension Magneto Ignition for Fordsons. Eliminates coils and timer. Prevents all ignition troubles. Installed with or without the Bosch Throttle Governor. Prices on request.



BOSCH DE LUXE IGNITION SYSTEM FOR FORDS TYPE 513

Includes the Bosch Coll, and Bosch Compensating Governor, which automatically advances and retards the spark to exactly meet the Ford engine's characteristics. Wonderfully efficient. Price, 325 00.

#### ONE BIG ADVANTAGE OF THE BOSCH

You don't have to stock a lot of special types and sizes. The 3 standard Bosch sizes enable you to equip all cars satisfactorily, whether equipped with balloon or high pressure tires.

#### PRICES PER PAIR

\$10

For Medium Cars.....\$1

In Canada \$20.00.

For Heavy Cars and Trucks...\$20
In Canada \$27.50.



BOSCH HIGH TENSION MAGNETO

The world's most dependable ignition system—over four million in use today—in demand everywhere for use on cars, trucks, tractors, motorcycles, motor basa and stationary engines. Prices on request.

# RORYOUR

# A 1925 Contract Up





HE new Willys-Overland franchise for 1925 means to dealers the sort of things the Declaration of Independence meant to American Colonists. It means independence . . . it means bigger earnings . . . it means freedom from factory redtape . . . it means financing helps . . . it means

cordial factory relations . . . it means everything that can contribute in any large or small way to the dealer's welfare and success.

This new franchise gives Willys-Overland merchants discounts superior to those offered by eleven of the fifteen first-line automobile manufacturers. Big discounts alone would mean nothing —but with big discounts the Willys-Overland merchants have volume in sales—and the two together mean big profits.

Under this one franchise the dealer has two complete lines of cars—models for everybody—with a range of prices that blankets the great, rich market under \$2000—the price market which attracts 90% of all motor car buyers. Two lines in one—therefore none of the complications of handling two lines under two different factories.

WILLYS-OVERLAND, INC., TOLEDO, OHIO

Big Volume

Big Advertising

Two Lines in One

WILLYS-

# SUCCESS

# to the Needs of 1925

Both Overland and Willys-Knight are very much in the spotlight. Both cars are being talked about everywhere—Overland for its new *all-steel* bodies, and Willys-Knight for the remarkable vibrationless performance achieved by the amazing new Lanchester Balancer, for which it has the United States rights.

Then there's the Willys-Overland advertising—big advertising—dominant advertising—placed where dealers feel it most.

And finally, broad, generous factory policies—helps, protections, benefits and advantages which satisfy every desire a dealer could have. Willys-Overland has always been known for its generous, fair-dealing relations with dealers—and now, in this 1925 franchise, is even more liberal than in the past.

If you want to be your own boss—and cash in the utmost on your business ability—and get more pleasure out of your business dealings—write for the whole inside story of the new Willys-Overland franchise. There is no obligation—and your inquiry will be held in strictest confidence. Write or wire.

WILLYS-OVERLAND SALES CO. LTD., TORONTO, CANADA

Bigger Net Profits

Prices for Everybody

Models for Everybody

Friendly Policies

OVERLAND



Fig. 1-Using 45° reamer for first cut.

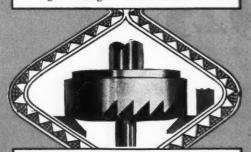


Fig. 2—Using 15° reamer for second cut.

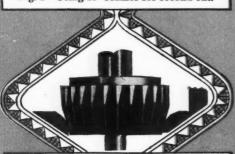


Fig. 3—Using 75° reamer for bottom cut.

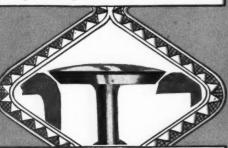


Fig.4-Seat finished with proper width for valve.

#### A Better Way to Reface Difficult Valve Seats

FOR more accurate fitting of the valve when reaming a valve seat over an uneven guide hole, this method is especially helpful. By the old method it is necessary to recut the valve seat to get it into alignment with the hole. Then, after reaming a second time, it is usually found that the seat has been reamed so far that it is too wide for a good, tight seating of the valve and leaves too much space for carbon to collect. Furthermore, the bearing surface is often much wider on one side of the opening than on the other.

This difficulty is avoided, and a quicker and more accurate job obtained, by reaming the face with 15 degree and 75 degree Sioux Reamers as well as the standard 45 degree.

All possibility of chattering valve seat is prevented simply by inserting a piece of 50 lb. wrapping paper, large enough to cover valve seat, on the stem against cutting points of reamer. Write for free sample.

When ordering 15° and 75° valve seat reamers, the 15° should be approximately the same as the valve head, and 75° in most cases should be approximately ½ inch smaller. Any size 15° and 75° Sioux Reamer may be obtained at the same prices as corresponding sizes of 45° reamers.



#### For Fitting New Valves to Worn Valve Guide Holes

—the best method is to ream out the worn valve guide holes to take oversize valve stems. The most successful type of reamer for this purpose is the Sioux Valve Stem Guide Reamer. It is made in sizes for reaming 1-64 inch oversize on all sizes of Valve Stem Guides. The pilot end of the reamer is to guide and prevent the reamer from following the worn part of the hole.

Sioux Quality—the highest grade tool steel, heat treated and ground with absolute accuracy. Insures a quick, sharp, smooth cut, and will keep its fine edges almost permanently.



Your Jobber Sells Them

ALBERTSON & CO.

SIOUX CITY, IOWA



AND AIR-PRESSURE

# Announcing-

# Today's new big thought in tires

Reflecting, in tires, what the foremost automobile engineers are accomplishing through motor designing

Until five years ago, mileage was the only standard by which a tire was judged. Then, in 1919, a new era of thoughtfulness on the part of car owners toward their tire equipment began when General introduced the low-pressure idea with the Jumbo  $30x3\frac{1}{2}$  Cord, requiring only 30 pounds air pressure.

The big mileage of the General Cord is still as greatly prized as ever, and users have also come more and more to appreciate the full meaning of personal comfort and car protection obtained by their successful use of low pressure in the General Cord.

Yet this leadership in low pressure, like General's outstanding record of long mileage, represents only a part of today's story of tire achievement.

There is still another advantage in the General Cord that fulfills the highest mission of pneumatic tires. For today the new, big thought in tires is POWER

## Power saving means longer motor life—less gasoline

The difference between running on General Cord equipment or upon the cords of some makes tested represents as great a difference in motor power as though the roller bearings had been taken out of the wheels.

Think of what that would mean in motor power—roller bearing manufacturers say a difference of

30% to 50%—yet that is no greater, in some cases, than the difference in rolling-resistance between General Cords and other makes. It runs as high as 30%.

Car owners who have not had experience with General Cords will be doubtful that the difference in tires can make such a tremendous difference in motor power and that one tire can stand out so far ahead of others in this respect. Yet, in the General Cord this is something that you can see and feel.

# A greater difference than you ever thought possible

The big difference in tires, their effect upon motor power, gasoline consumption, the very life of the motor and the lasting of the tires themselves is found on the *inside* of the tires.

You cannot "look" inside of tires. You do not know what to look for. But on the following two pages General gives you a practical way to compare all tires—an "X-Ray" that shows up the inside of them and enables you for the first time to judge for yourself the true value in tires.

Read on the following two pages the results of tests in Akron and in California, also the Government Bureau of Standards tests at Washington — and how these tests clearly demonstrate the biggest economies to be found in car operation as well as in the tires themselves.

# Results of tire tests show remarkable power-saving

These photographs, taken June 13, 1924, demonstrate General Cord's amazing advantage in motor power. They show that the General Cord equipment on a car absorbed 18.4% less motor power than was absorbed by the average makes of tires tested. In other Akron road tests, General Cords showed as high as 30% less power-loss than the competitive tires.

#### Details of Tests

The coasting tests illustrated here were made in Akron June 13, 1924, with a Big-Six Studebaker equipped first with General Cords and then with two other well-known makes of tires.

In each test, car started at top of hill. Distance coasted on level was measured from foot of hill to point where car came to dead stop. Note position of cars in photographs 1, 2 and 3.

All tires were of same size, regular 33 x 5 Cords, all were 8-ply tires and all were inflated to 40 pounds air pressure. Tests were made without the use of power, gears being in neutral and start made by simply releasing brakes.

In test No. 2 the car stopped at a point 296½ feet short of the mark to which it had coasted when equipped with Generals. In test No. 3 the car lacked 442 feet of coasting up to the mark that was made on Generals.

The General Cords outcoasted the other tires an average of 369¼ feet, or 18.4%. This indicates 18.4% less rolling-resistance in the General Cords. In still



Coasted 1,575 Feet another test General Cords coasted 618 feet farther than the competitive tires which coasted 2,060 feet, indicating 30% less rolling-resistance with General Cords.

**Extended Motor Life** 

The above tests clearly show how a car rolls more freely on some tires than on others. This rolling-resistance in tires is due to their internal friction. It works just as actively against the progress of the car when power is being used as when coasting. In some tires it amounts to a tremendous drag against the power of the motor.

At first thought you may consider that your car has power to spare. That is true when it is running on level roads. But when heavy road conditions call upon the motor for real pulling or when you are attempting to climb a difficult hill, when your motor must develop its power to the last ounce, it is then that the tires with the least rolling-resistance prove their value.

It is the last straw that breaks the camel's back and similarly it is the last horsepower your motor must develop under special conditions that puts the telling strain upon it. That is why the General Cord with its advantage in motor power — due to less rolling-resistance — adds to the life of your motor and pays dividends in the form of fewer motor repairs and longer motor life.

Still another important result is fuel saving. The fact that there is less rolling-resistance and less power loss in the General Cord means less gasoline. Tests made by large fleet operators have shown 10% and 12% gasoline savings.

From a California dealer's letter concerning tests between General and other tires made by one of the big stage operating companies:

Coasted

#### \$6,000 Gasoline Saving

"On the California Transit Company tests we also used a gas measure holding two quarts of gasoline. The results of this test were especially interesting to Mr. Travis, as they show where a saving of at least \$6,000 a year can be made on gas alone by his company.

"On one hill, in order to maintain a speed of 25 miles per hour, it was necessary to shift gears when equipped with .... while the Generals rolled over the top at 24 miles per hour in high. The driver called attention to this.

"...., of course, received word of this test and have used all kinds of alibis. One was that new tires were not used. This was quickly disposed of by showing them that the tires were new and had just been received from their factory. Their next alibi consisted of a several-page telegram describing the tread shape and insinuating that Generals lacked in non-skid feature and this was the cause of their rolling qualities.

"We matched this by showing Travis the Bureau of Standards tests with various treads and offered to make the tests on the bare carcass, also to beat them in a non-skid test."

The test cited above is one of many which have been made by some of the largest commercial users of pneumatic tires in the country. Wherever these tests have been made they have clearly demonstrated the tremendous economies the General Cord offers fleet operators.

# Explaining longer tire wear and low-pressure advantages

When you realize to what an extent motor power is affected by internal friction in some tires, and how such tires actually retard the free-rolling of the car, you get some idea of what must be taking place inside of the tires themselves-terrific straining and wrenching, cords rubbing against cords, wear-

It is this inside wear that causes in tires the excessive internal friction that eats up motor power.

Thus, the greater motor power, demonstrated with General Cord equipment in the above tests, is due to the fact that they have less internal friction, consequently less internal

wear. This explains to users the extended mileage they receive.

It also explains how the General Cord users have for years been able to run successfully with 30% to 40% less air than the standard pressures formerly recommended.

It is the General Cord's greater freedom from internal friction under all conditions of service-and the fact that this advantage is gained without sacrifice of any essential in proper construction-that enables it to stand up and deliver the big mileage.

Without this mileage in the tire itself there would be no true economy in its motor power and gasoline saving advantages. It is the combination of all three of these outstanding features in General Cords, all types and sizes, that gives you a practical way to judge and compare the real value in tires.

#### Government Tests

The Government Bureau of Standards at Washington has made exhaustive tests of tires manufactured by 35 companies. Their book, issued September, 1923, fully explains the variations in rolling-resistance demonstrated in General's actual road tests of tires. Read the following extracts from their book:

"The outstanding feature brought out by these dynamometer tests is the wide variation in the power loss of different makes of tires. . . . . . the greater part of the power loss must occur in the carcass of the tire—the loss in the tread represents only a small part of the total loss in the tire.

> "There is no question but that the uniformity of cord construction.... in tires Eand Fis a factor which makes them stand out far below the average in power loss.'

Any distributor of the General Cord will gladly show you the photographs in the Bureau of Standards book. He will also show you cut-down sections of the General tire, which you will readily recognize from the examples shown in the Bureau of Standards book representing the tires that made the best records in their test. This will show you just why there is less internal friction in the General Cord and therefore less rollingresistance—more power and less gaso-line consumption—longer wear in the tire itself and better ability to run with low pressure. Upon request an official copy of this book will be sent free of charge by The General Tire and Rubber Company.

THE GENERAL TIRE AND RUBBER COMPANY AKRON, OHIO



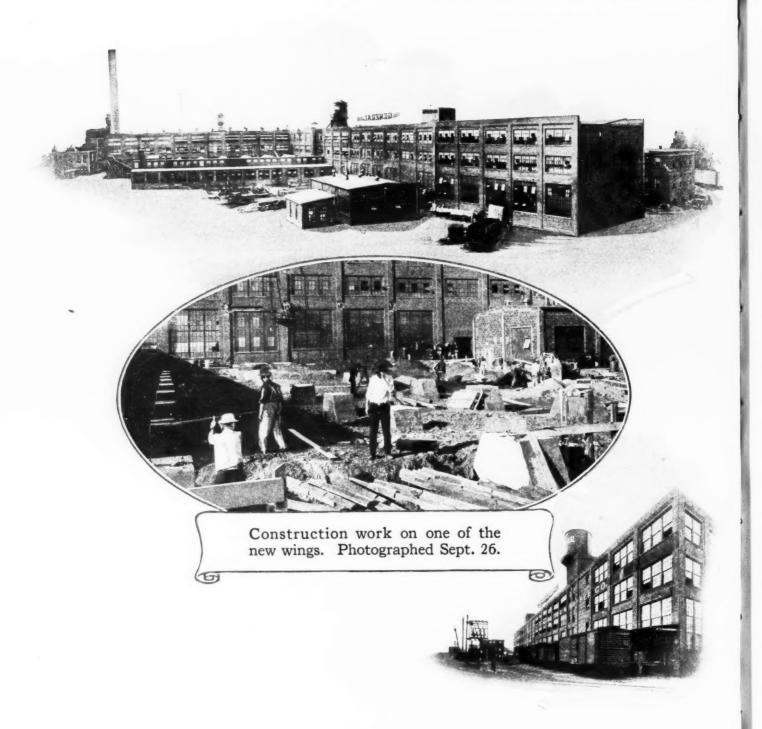
1,7021/2 Fee



Coasted 1.998 Feet

The GENERAL CORD

-goes a long way to make friends



Showing one of the new factory wings now under construction for the General Tire and Rubber Company at Akron. These additions will be completed in time to give greatly increased production for making spring delivery—assuring adequate stocks not only for the established General distributors but also for a limited number of new distributors in some territories. The General salesmen will resume calling upon prospective new distributors beginning Oct. 15th and can make new connections for 1925 business.



# More Business—Bigger Profits

#### HOLT TRACK PIN

The Holt track pin illustrates the rigid requirements of Holt quality; and it is an important factor in "Caterpillar" strength and endur-

cold drawn 3½% nickel steel, used in 5-Ton and 10-Ton track pins, has an initial tensile strength of 65,000 lbs., Sclerescope hardness 25 to 30. This stock is subjected to three heat treating operations. (1) Case hardening; to withstand abrasion. (2) Hardening; toughening the core; increasing hardness of case. (3) Drawing; refines metal structure. The track pin emerges from the Holt heat treatment with a tensile strength of 140,000 lbs., Sclerescope hardness of core 40 to 45, hardness of case 75 to 85; doubling initial tensile strength, tripling initial hardness.

You welcome any idea or suggestion that points to more profits; to making your business better as well as bigger.

You have at your door an untouched market. Hauling contractors; public utilities and engineering projects; large industrial enterprises; golf clubs; public officials—state, county, municipal—who are interested in better roads; logging operations—all these are potential buyers of "Caterpillar" Tractors.

Somebody is going to make these sales. Why not you?

Your business is physically set up so that you can sell "Caterpillars" without a single important change and without materially increasing your capital investment. And you don't compete with yourself. You can "fill up the valleys" in your sales curve with "Caterpillar" sales. It's an allyear market, growing steadily. It's safe business; because the "Caterpillar" has proved its economic value. It has proved its ability to do the tough hauling jobs better, quicker and cheaper.

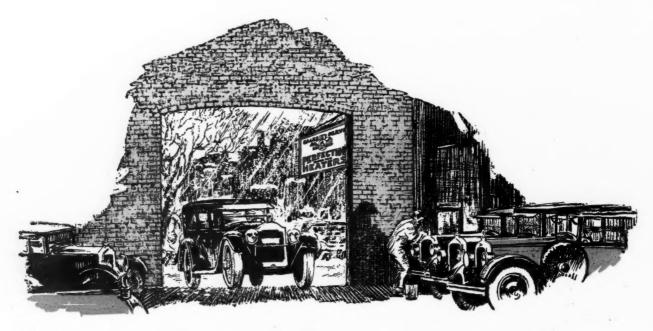
There's a size of "Caterpillar" for every tractive-power need. The 2-Ton handles lighter tasks; the 5-Ton has ample capacity for medium requirements; the 10-Ton is supreme for all heavy duty.

"Caterpillar" dealers enjoy the most substantial, most profitable tractor business in their communities. If you feel that your organization is qualified to make the most of this opportunity, get in touch with us. We're interested in talking to automobile dealers. You'll be more interested after talking to us.

## THE HOLT MANUFACTURING COMPANY, INC. PEORIA, ILL. STOCKTON, CALIF.

Export Division: 250 W. 54th Street, New York





# Service Stations— Keep Them Coming In This Winter—

HE demand for heated cars has been growing steadily for years. This year everybody wants one. Every man and woman who owns a car is anxious to drive in good, solid comfort in cold weather.

They all know about the Perfection Heater. They all know that a Perfection heated car is a comfortable car, even when the mercury's hovering around zero. For the Perfection is the original car heater—nationally known—nationally advertised—nationally demanded.

Good service stations everywhere are capitalizing Perfection Heater popularity—making it pay them, and pay them well—when business would otherwise be slow.

The Perfection Heater service station proposition is a corker. Look into it. The little coupon in the lower right hand corner will bring you the complete story. Tear it out—write in your name and address—slip it in an envelope and give it to the postman today. It's good business.

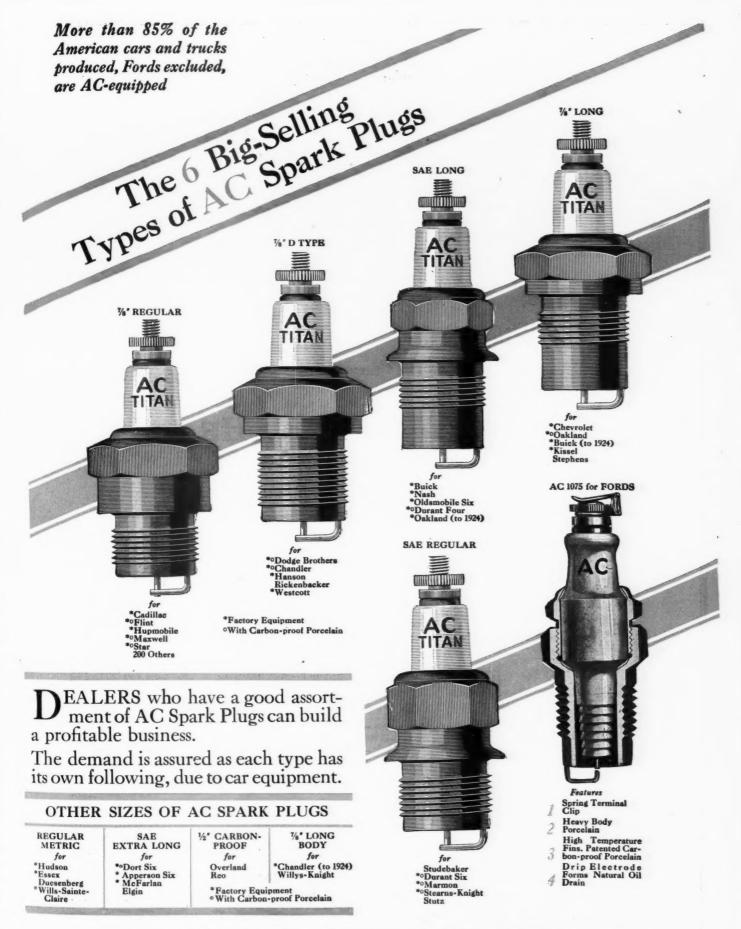
THE PERFECTION HEATER & MANUFACTURING CO., CLEVELAND, OHIO

Manufactured in Canada by Richards-Wilcox Canadian Co., Ltd., London, Ont.

The Swan Carburetor Co., manufacturers of the Swan System of Fuel Distribution, is a subsidiary of The Perfection Heater and Manufacturing Company.

# PERFECTION MOTOR CAR HEATERS

The Perfection Heater & Manufacturing Co. 6545 Carnegie Ave. Clevel and, Ohio.
Send us, without obligation, the story on how to make money this winter.
Name
Address
City



AC-SPHINX Birmingham ENGLAND AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs-AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

AC-OLEO Levallois-Perret FRANCE



# Announcing ~ THE Stewart CAR HEATER with the Double Exhaust Valve

#### Quick Heat — More Heat Perfect Control from the Dash



The Stewart Exhaust Valve is, in reality, two valves. For it has two dampers that work at right angles to each other—one closing the exhaust pipe, while the other opens the car heater intake, and vice versa.

This feature of the Stewart Double Exhaust Valve makes possible the utilization of all the heat from the engine. When opened, it blocks the exit through the exhaust pipe, and sends the hot air up through the heating unit, to quickly warm the interior of the car.

When closed this double valve completely blocks the entrance of the exhaust to the Car Heater, and opens an escape for it through the exhaust pipe. THE Stewart Heater warms the interior of a car to a cozy temperature in an absolute minimum of time. Quick heat is a distinctive Stewart feature. The construction of the Stewart heating element is a decided departure from the usual type of cast-iron heating units. The Stewart is made of drawn steel. This type of heating element is warmed much more quickly. Heat radiation starts within the car body as soon as the Heater is turned on.

Ease of operation is another feature of the Stewart Car Heater. A convenient wire control, leading from the instrument board to the Stewart Double Exhaust Valve enables the driver to easily turn the Stewart on or off.

When open, this Valve directs the entire exhaust up through the Heater, immediately starting heat radiation within the car body. When closed it is absolutely tight. None of the exhaust can pass through. The Stewart will not heat up the car on a hot summer day—a feature experienced motorists will appreciate.

Our immense production facilities make it possible for us to quote an interesting price to car manufacturers and dealers.

STEWART-WARNER SPEEDOMETER CORPORATION CHICAGO, U. S. A.



CUSTOMBILT ACCESSORIES



The valve installed on the exhaust pipe. Heavy asbestos gaskets make this installation absolutely leakproof. The one valve fits practically all makes of cars.



The Stewart Heater is easily operated by a convenient dash control, making it possible to regulate the temperature of the car interior to a fine degree. With a Stewart, the car owner and his guests ride in perfect comfort.

List Price

Large Model ......\$22.00 Medium Sized Model ...... 18.00

Western Prices, \$1.50 additional

USED ON 9 MILLION CARS



# The Right Spring for Any Car IN A HURRY

A telephone and this new Detroit Spring price list—and you're all set to give the best spring service in your locality. Then when you have a replacement job, on any make of car or truck, just call up your nearest Detroit distributor and he'll get the right spring to you, in a hurry.

Your distributor has a complete stock of genuine Detroit Springs—the best springs you can put under a car. They are exact duplicates in every way of the original equipment, "built to the car maker's specifications." They fit and they save your valuable time.

And now you can identify genuine Detroit Springs—by the letter "D" raised on each clip bolt head. You can be sure you are supplying the right spring for every replacement job and sending away a satisfied, business-building customer.

DETROIT STEEL PRODUCTS CO., 2268 E. Grand Blvd., Detroit, Mich.



BUILT TO THE CAR MAKERS' SPECIFICATIONS



#### Good arrangement in limited space

The average dealer finds Berloy Bins and equipment ideally suited to his space limitations.

The reason is that Berloy Bins do not come in rigid, hard-and-fast systems. The boltless divider, which makes it possible to change the width of any bin in five seconds, without tools, provides an elasticity of arrangement found in no other bins. It is exclusive with Berloy.

A wide variety of stock can be carried in two or three units, if that is all you have room for. Dividers are adjustable every inch and a half in the shelves. One unit 3 feet wide, 7 feet high and 1 foot deep can be arranged to contain 100 bins, if necessary.

The shop of Walter Jolliff, at Wooster, Ohio, pictured above, presents an attractive and business-like appearance, yet he hasn't a great deal of space. Berloy Bins and a Berloy Steel Counter have helped him utilize his space to best possible advantage. He can give you anything you want instantly. Orderly arrangement keeps his stock in perfect order. He says his Berloy Bins are paying for themselves through increased turnover and accurate stockkeeping.

They have done the same thing for hundreds of dealers, large and small.

Ask the nearest office to send you automotive catalog R-30. It gives full details

#### THE BERGER MANUFACTURING CO.

CANTON, OHIO

St. Louis Los Angeles New York Kansas City Dallas Philadelphia Minneapolis Roanoke Chicago San Francisco Jacksonville

BERLOY

R A D I O

ATWATER KENT Radio combines in the highest degree the qualities that mean satisfaction to the dealer and his customers

DURABLE construction,—Selectivity,—Simplicity of operation,
—Volume,—and Tonal Quality.

The successful combination of these qualities, together with its fair price is the basis of the popularity of ATWATER KENT Radio; it is the accomplishment of a great electrical laboratory and the climax of more than a quarter of a century in the manufacture of scientific electrical instruments.

ATWATER KENT Receiving Sets and Loud Speakers will increase your sales. One ATWATER KENT instrument leads to the sale of another ATWATER KENT instrument just as surely as noon-day follows dawn. This has been the experience of thousands of radio merchants.

Send for descriptive literature and dealer price list

ATWATER KENT MANUFACTURING COMPANY 4733 Wissahickon Avenue, Philadelphia, Pa.

#### Loud Speakers

Everyone can now enjoy an ATWATER KENT Loud Speaker; there are sizes and prices to meet every buyer's preference.

\$15 \$20 and \$28

#### Receiving Sets

Model 20 De Luxe
5 tube—beautifully finished
mahogany cabinet

Price \$120

MODEL 12-6 tube-famous ATWATER KENT open type Price \$105

Model 20-5 tube—enclosed in mahogany cabinet

Price \$100

Model 10-5 tube-open type Price \$85

Model 19-4 tube-cabinet type

Price \$85

Model 9-4 tube-open type
Price \$65



# Coming!

# Complete Flat Rate Schedules

At last! What you have wanted for so long is about to arrive! Complete Flat Rate Schedules for all cars and all operations! One master table that covers all of them, and gives you at a glance the time charge on any job that rolls into the shop—a time saver, and a money saver that the whole trade wants and needs.

#### 23 Popular Cars — 101 Operations

Are covered in this big table. The cars listed cover about 95 per cent of the maintenance work that the average shop has occasion to handle, and full directions are given for adapting the rates to makes of cars not included in the special list.

As a reader of MOTOR AGE, you are probably familiar with the flat rate articles by Paul Dumas that have appeared during the past year. This special chart is the outgrowth of those articles, and summarizes the great mass of information previously printed. It is a truly comprehensive digest of the whole flat rate question—a thing never before attempted.

#### Don't Miss This Big Table!

It will be published as a special supplement in our issue of October 23rd. Watch for it! It will not be published a second time, and your only chance to secure it will be with your copy of MOTOR AGE for that date.

If you are not a regular subscriber, but engaged in the automotive business, you can make sure of getting the Complete Flat Rate Schedules by sending in your subscription today. Your name will then be on our list in time to insure you a copy of the issue containing them.

#### MOTOR AGE,

5 S. Wabash Ave., Chicago, Ill. IMPORTANT MOTOR AGE is published excriptions are accepted only from those actively engaged in our field—so please don't forget to include your business card or letter head with this order.

Gentlemen: Enclosed find \$3.00 to pay for a year's subscription to MOTOR AGE, including the issue of October 23, 1924, containing the big table of Flat Rates for all popular cars.

Name .....

Street and No.

City \_\_\_\_\_State \_\_\_\_

Firm Name

# Brakervice Is Your Shop the Place Is for an Authorized In Crimold SERVICE SERVICE SERVICE

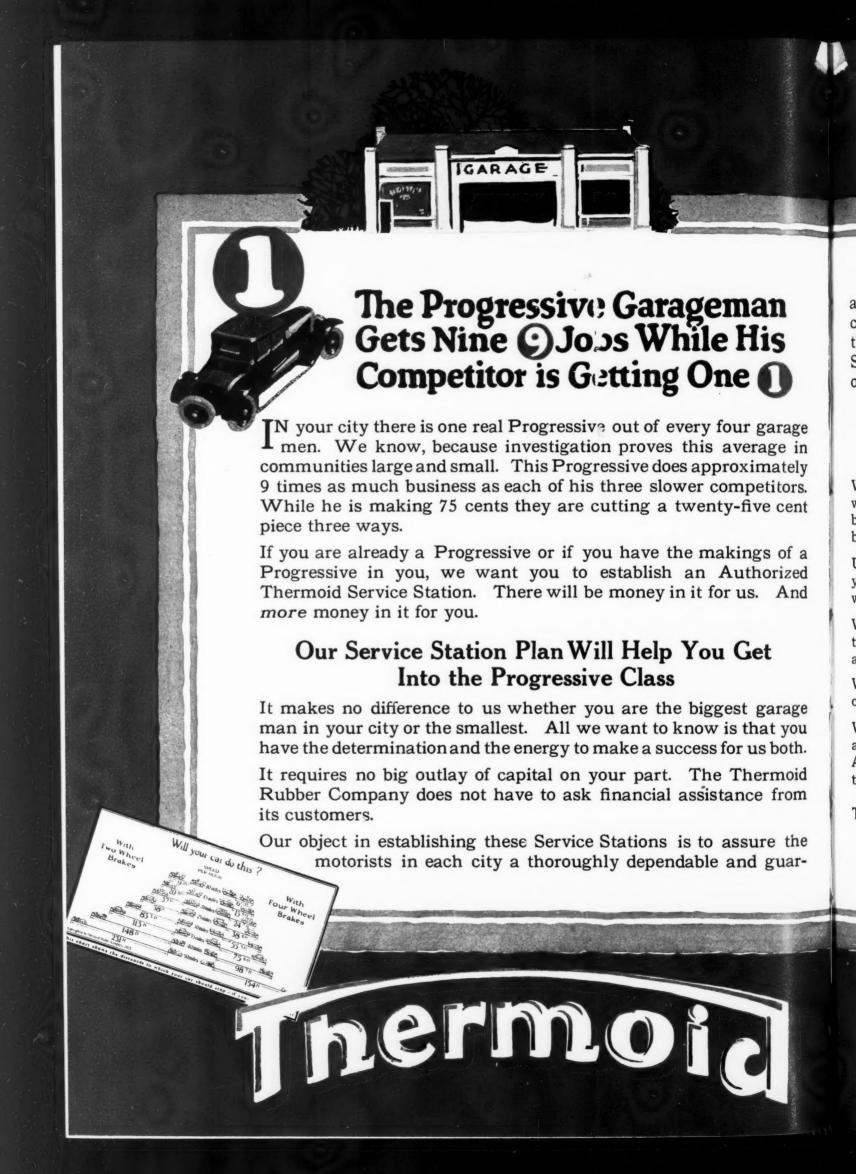
THERMOID RUBBER COMPANY, TRENTON, N. J.

I think my shop is the place for an Authorized Thermoid Service Station.

Send me details of your co-operative plan for putting my brake lining business on a big paying basis.

Name .....

Address



anteed brake service. If you are the man who can render that kind of service, your shop is the place for an Authorize 1 Thermoid Service Station. Let us hear from you via the coupon on the preceding page.

## How We Co-operate With Our Service Stations

We have worked out a simple, but very effective system, which enables the Authorized Service Station to make brake jobs a big and highly profitable end of the garage business.

Under this system we co-operate with you in putting your brake department on a thoroughly modern basis, whereby labor and other costs are cut to the minimum.

We show you how to attract not only the business of the motoring public but of the operators of truck fleets as well.

We make it possible for you to handle brake jobs for other garage men at a profit both to you and them.

We furnish, at no cost to you, carefully prepared and attractive literature, advertising your shop as an Authorized Thermoid Service Station. If the proposition looks good to you, mail us the coupon today.

#### THERMOID RUBBER COMPANY, Trenton, N. J.

New York, Chicago, Los Angeles, Detroit, Atlanta, Seattle, Kansas City, Boston, San Francisco, Cleveland, London, Paris, Turin

Makers of Rexoid Transmission Lining, Thermoid Tires, Thermoid-Hardy Universal Joints

HYDRAULIC COMPRESSED

Brake Lining



But in addition—our co-operative plan includes a series of local advertisements which give you a "tie-up" that definitely makes your shop "brake lining headquarters."

### THERMOID RUBBER COMPANY, Trenton, N. J.

New York, Chicago, Los Angeles, Detroit, Atlanta, Seattle, Kansas City, Boston, San Francisco, Cleveland, London, Paris, Turin

Makers of Rexoid Transmission Lining, Thermoid Tires, Thermoid-Hardy Universal Joints

Thermoid

Hydraulic Compressed

Brake Lining



## Ball Bearing Axles Do Not Fail

HEN the pinion gets "chewed up", what has taken place?

Just this. The bearings which surround and support it have become loose and have allowed the teeth to climb out of mesh, to clash and flake. In other words, the supporting bearings are probably types which wear and whose adjustment has been too long postponed.

Ball bearings do not wear and do not need adjustment. They give constant and rigid support and, hence, permanently maintain proper setting of pinion teeth with those of the ring gear. Consequently ball bearing axles do not fail.

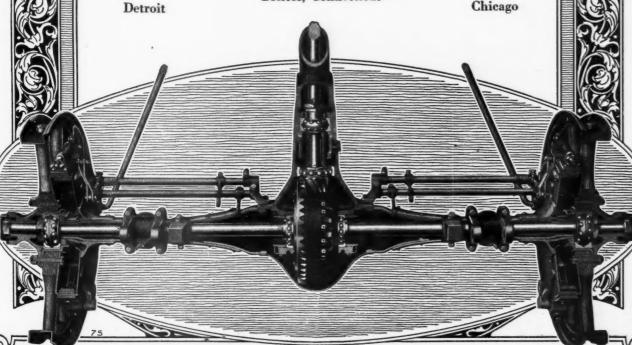
Freedom from noise is also obtained by the rigid support characteristic of ball bearings.

New Departure ball bearings outsell because they excel.

THE NEW DEPARTURE MANUFACTURING CO.

Bristol, Connecticut

Chicago



earings Do Not Wear

## Start NOW with Fisks!

## Have Two Profitable Months Before The New Year Begins

PROGRESSIVE tire dealers by the hundreds will take on the Fisk line next year. But why put off the days of success? Sell Fisks now and enjoy two extra months of good business before the new year starts.

Fisk sales day by day prove there is a constant and rapidly growing preference among motorists for Fisk tires. There is a share of profit waiting for you.

The Fisk Line includes such a wide range of types at such a wide range of prices it cannot fail to meet every need of every car owner in your neighborhood.

Business is sure and customers' satisfaction is an asset when you sell Fisks. Get a head start on next year's business.

Write now for information regarding the specially attractive Fisk franchise proposition

The Fisk Tire Co., Inc.

Chicopee Falls, Mass.



**SELL FISKS FOR A PROSPEROUS 1925!** 

## Rickenbacker A · CAR · WORTHY · OF · ITS · NAME

## Superior in Both Types

Famous "6"—Vertical "8"

The dealer who has the Rickenbacker line in the future will be sitting on top of the world.

For this line now comprises the two most profitable types—those which appeal to the great middle class of buyers, who know values, and demand the utmost for their money.

This Six, you know. It has set the pace in advanced engineering for three years.

And now that wonderful Vertical - "8" - Superfine, selling at a thousand to two thousand dollars under competitors, out-points and out-performs the previous best cars.

This is the car of the connoisseur—drive it yourself and you will never be satisfied until you can offer this line to your own clientele.

Suggest you get in touch with our Sales Department today. A few good points still open.

### Rickenbacker Motor Company

Detroit, Michigan

	Fai	mo	us	660	Six	,,,	Pr	rices		
Sport	Pha	eto	n			-				\$1595
Coupe					-					2095
Sodan	-		-			_				2105



 Vertical
 "Eight"
 Prices

 Sport Phaeton
 - · · · · · · \$2195

 Coupe
 - · · · · · · · · 2695

 Sedan
 - · · · · · · · · · · · · 2795

f. o. b. Detroit-plus war tax



## Did you ever have a pair of shoes that squeaked?

Noisy gears are as irritating as squeaky shoes

If you were a shoe dealer you wouldn't long sell squeaky shoes. Your customers would bring them back to you and register an emphatic kick.

The men who drive the cars you sell don't have to put up with the irritation of humming, snarling timing gears. Timing gear sets can be made permanently silent by the use of Celoron Silent Timing Gears.

Many popular makes of cars, such as the Rollin, Marmon, Maxwell, Oldsmobile, and Nash, are factory-equipped with timing gears of Celoron. If your car is an old model of any of these popular makes (with metal timing gears) you can have Celoron Silent Timing Gears installed at the regular service stations.

Service stations and repairmen all over the country are silencing timing trains with these durable, non-metallic gears. They fit any timing set. They permanently rid the motor of noise.

#### Why metal gears are noisy

Noise in the timing gear case is caused by worn metal gear teeth which develop play and strike with a metallic

and strike with a metallic clink. These taps coming in rapid succession produce the familiar harsh grind that makes many

F you were a shoe dealer you wouldn't otherwise quiet motors sound old. Now long sell squeaky shoes. Your custhere is a way to stop that noise.

#### Hushing noisy gears

Celoron Silent Timing Gears eliminate noise in the timing gear case by preventing contact of metal on metal. These gears are hard, tough, light. They are resilient and absorb shocks and vibration. They give longer life to all the operating parts of the timing train. Gears of Celoron make timing positive, accurate and silent during the life of the motor.

#### How Celoron gears are made

Celoron is a laminated phenolic condensation material bonded with bakelite. Gear blanks are either molded or cut from sheet stock.

Celoron is a readily workable material. It is easily machined, can be sawed, turned, threaded, punched and drilled.

Celoron is made into silent timing gears for the replacement trade by Dalton and Balch. Jobbers and dealers all over the country carry stocks of these gears.

Look for the "Celoron" and "D & B" marks. They insure your getting a genuine Celoron Silent Timing Gear.

## Diamond State Fibre Company

SILENT GEARS

Bridgeport, Pa., and Chicago, Ill.

London, England



# Automotive Jobbers Can Cash in on "Van Dorn" Prestige, Performance and Publicity

Jobbers on the lookout for opportunities to add profit making lines, will find that "Van Dorn" Electric Tools take them into a practically unlimited market.

This reprint from The Saturday Evening Postshows that the mighty force of advertising is at work to swing open the door of this great market to the "Van Dorn" Distributor.

A "Van Dorn" representative will be pleased to discuss our agency proposition with you.

#### The Van Dorn Electric Tool Co.

Makers of Portable Electric Drilling, Reaming and Grinding Machines, etc.

Cleveland, Ohio

#### Factory Representatives

\*New York City \*Boston Philadelphia Buffalo Pittsburgh Chattanooga \*Chicago Richmond \*Cincinnati \*St. Louis St. Paul \*Denver \*Detroit \*San Francisco Kansas City \*Seattle \*Los Angeles \*Toronto Montreal \*Service

gilmer

There's a new

## GILMER CATALOG

just off the press—which contains up-to-date specifications on Gilmer belts for the new makes of cars and for the new models of old makes.

It also tells about the new and improved Gilmer Super-Service Fan Belts and gives the details of our special offers to the Trade on minimum stocks with

### STOCK AND DISPLAY CABINETS

Your copy of this catalog is awaiting your request to be mailed

L. H. GILMER CO.

Tacony
PHILADELPHIA, PA.





Originators of Bosch Automotive Equipment Mark Their Units With the Full Name

ROBERT BOSCH and the Trade-Mark Shown Below You Can Therefore Easily Identify the Genuine Bosch Products as Sold the World Over Since 1887

Magnetos ~ ~ ~ ~ Horns Generators ~ Starters Spot Lights - Hydrometers Magneto Generators

ROBERT BOSCH MAGNETO CO INC. Otto Heins. Pres.

123 West 64 th Street ~ ~ ~ New York City Service Stations in Principal Cities the World Over

Always look for this trademark

and Specify
ROBERT BOSCH

Dealers .- Send For



Franchise Details



## VANISHED ACHES!

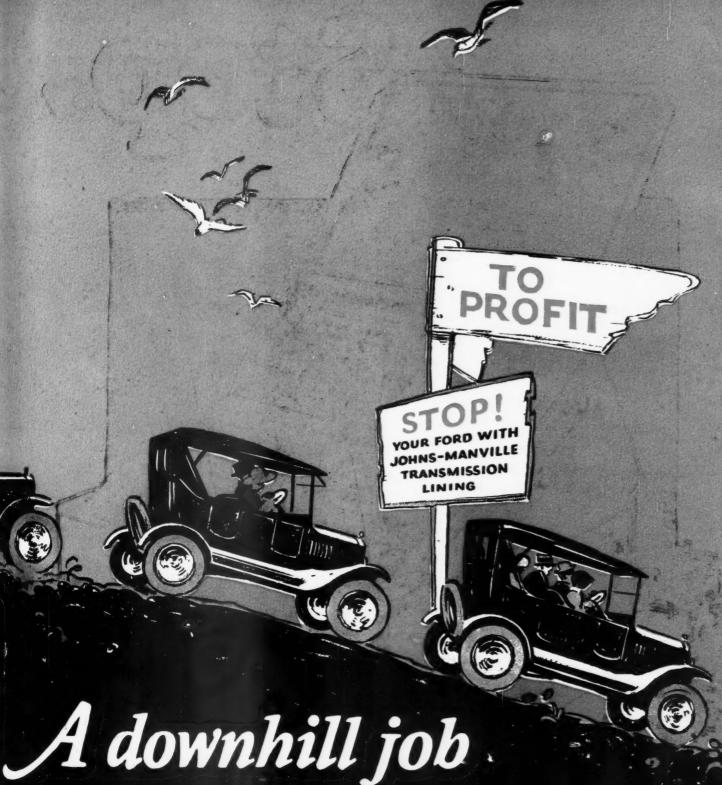
ACHING fingers, aching arms, aching shoulders, aching back! Why should steering be so hard? Can't the shocks of the road be kept out of the driver's arms, shoulders and back? Yes! Ross is doing it with the Cam and Lever Steering Gear—a real achievement in automotive engineering.

Write for details

ROSS GEAR AND TOOL COMPANY, 400 Heath Street, Lafayette, Indiana



EASIER STEERING LESS ROAD SHOCK

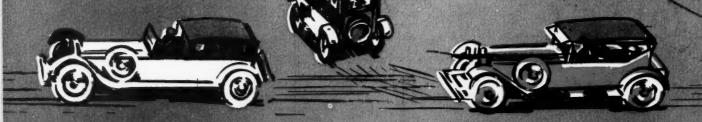


Selling Transmission Lining to Ford owners is no longer an uphill task. Many things combine to make the market easy to sell and profitable...Read about it on the next pages.

STOP! STOP!

JOHNS-MANVILLE
Transmission Lining





## every other motorist

## with this display carton on your counter

EVERY other car on the road today is, as you know, a Ford. A tremendous market but often a neglected one.

We want to help you get more profit out of this market.

So we are now packing our Transmission Lining for Ford cars in a

mighty attractive carton which can be quickly and easily turned into a counter or window set-up.

Get yours from your Distributor. It asks dem to buy.

The unusually oily conditions under which brake lining works in Ford cars requires an unusual lining.

Johns-Manville Lining for Ford cars
is especially adapted to this.

When a prospect picks up a package of this brake-lining from your counter he knows that it isn't Anybestos or Morebestos—but that it's Johns-Manville Asbestos and is backed

by the reputation and workmanship of Johns-Manville.

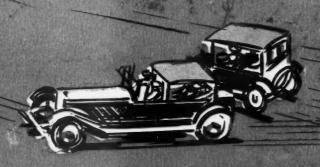
Get in touch with one of the Distributors listed on the next page. Ask him about the complete Johns-Manville Automotive line and our attractive sales policy behind it.

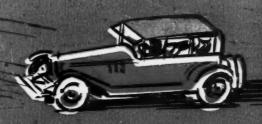


Every brake Inspection Certificate you sign should mean a profit in your pocket. Control the brake lining business in your locality with these cards. Get a supply from your distributor.

## Johns-Mainville Automotive Equipment







## **CHOOSE** YOUR DISTRIBUTOR

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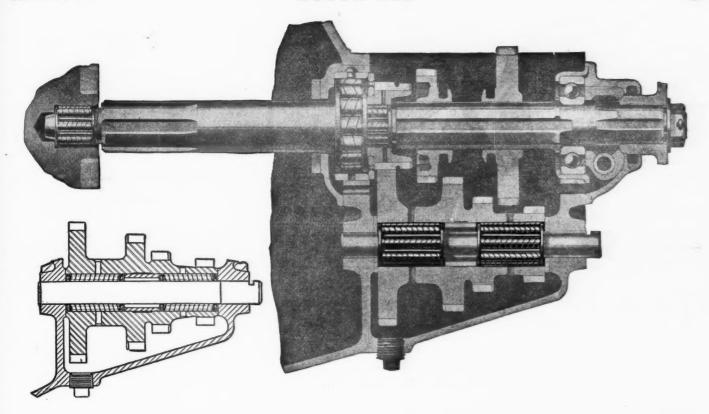
Jugo-Slavia William H. Smyth, Belgrade Mexico Auto Supply Co., Mexico City New Zealand Jas. J. Niven & Co., Ltd., Wellington

Norway
Corneliussen & Sta'gold A/S, Christiania
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Asbestos PACKINGS CEMENTS



## Higher Quality Transmissions at Low Cost No. 3 On Stationary Countershaft

Motorists appreciate transmissions that give them satisfactory service with little attention.

Countershafts equipped with Hyatt bearings run quietly and smoothly throughout the life of a car with practically no bearing replacements and no bearing adjustments.

When plain bushings are used there is a steadily increasing amount of noise due to the inevitable wearing of the parts. This noise is intensified by the sounding board action of the transmission case.

Hyatt bearing transmissions not only run quietly when they are new but continue to maintain their quietness throughout the life of the car. In addition the spirally wound rollers effectively dampen gear noises.

Transmissions equipped with Hyatt bearings are simpler and easier to assemble and therefore cost less. Give careful consideration to the real saving Hyatt bearings can effect for you in bettering stationary countershaft construction.

#### HYATT ROLLER BEARING COMPANY

NEWARK DETROIT CHICAGO SAN FRANCISCO

PHILADELPHIA PITTSBURGH WORCESTER CLEVELAND MILWAUKEE

HYATT Roller Bearings

# The Asset SI

Only the ROSE Tire Pump excels the DAISY in Value

## The Most Tire Pump Ever Sold for a Dollar

Most dealers carry the famous Rose "Easy Valve Action" Tire Pump for the bulk of their trade and a cheaper pump for folks who look at price first.

For such trade we have built the Daisy; the best dollar pump in the world. For the price it is a bear for work. It has perfect compression and an easy, labor-saving stroke. It is made by the same men and on the same machines as the Rose.

We have never seen any pump at near the price that can compare with it.

All Rose jobbers carry the Daisy. Place your orders through them.

Frank Rose Mfg. Co., Hastings, Nebr.

### ROSE TIRE PUMP HOSE

In display cartons. Six to the carton. List price, 50c. The best hose made. 24 inches long. 5-ply live rubber. 17/32 outside, 3/16 inside. The demand for pump hose these



days is stronger than it has ever been. Carry Rose Pump Hose in stock.



## Prosperous Shops Use

## PARANITE ELECTRIC CABLE

Good Service Stations have known for years that it doesn't pay to use electrical cable of inferior quality and many of the best of them have come to depend upon PARANITE exclusively.

They know it to be uniformly good, to be exceptionally free from the flaws so often found in less carefully made cable; and they like the fact that it can be obtained from almost any good Jobber. Its use will simplify all your ignition work.

It is not high priced, as you will learn if you specify PARANITE the next time you order from your Jobber.

### Indiana Rubber & Insulated Wire Co.

Jonesboro, Ind.

A. J. Mussleman, 549 W. Washington St., Chicago, Illinois

Geo. R. Hall, West Hartford, Conn.

Making good cable in Jonesboro for over 34 years.



Charging and Storage Battery Cable—Horn and Lamp Cord—Lighting Cable—Limousine Cord — Low Tension Cable—High Tension Cable—Spotlight Cord—Starting Cable.



## PARANITE

## Reliability

THAT is one of the big reasons why Rie Nie Fan Belts enjoy the confidence of motorists and dealers everywhere.

They have won the confidence of motorists through their unfailing performance under the most severe driving conditions—and the confidence of dealers through the large number of satisfied customers and increased profits they produce.

Rie Nie Fan Belts are built of a fabric of highest tensile strength, impregnated with a specially prepared oil, heat and waterproof rubber compound. For durability, firm, sure grip, Rie Nie Fan Belts are unexcelled.

There is a Rie Nie Fan Belt for every make of passenger car, truck, tractor and circulating water pump.

Vee Round for Grooved Pulleys
Flat Type for Regular or Crowned Pulleys.



### **Automotive Supplies**

All in One Dressing
Aluminum Ename!
Battery Paint
Bearing Blue
Clutch and Brake
Compound
Enamel (Air Drying)
Enamel (Cylinder)
Fan Belts
Friction Tape
Gasket Cement

Graphite
Leather Dressing
Metal Polish and
Nickel Polish
Patch
Pedal Pants
Polish—Auto Body
Radiator Cement
Orange Shellac
Radiator Hose
Rim Paint

Rubber Cement
Shellac (Gasket)
Rubber Filler and
Cement
Spring Lubricant
Tire Mica and Tire
Talc
Tire Paint
Valve Grinding
Compound
Varnish (Clear Auto)



## For Service Equipment refer to the catalogue with the golden rod section

#### MEMBERS

#### Service Equipment Associates

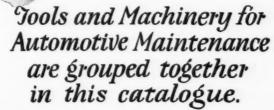
Albertson & Co., Inc.
Sioux City, Iowa
T. R. Almond Mfg. Co.,
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The Black & Decker Mfg. Co.,
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Kellogg Manufacturing Co., Rochester, N. Y. The Manley Mfg. Co., York, Pa.

Wood-Imes Mfg. Co., Minneapolis, Minn. Oxweld Acetylene Company, New York, N. Y., & Chicago, Ill.

Stevens & Company New York, N. Y. Weaver Mfg. Company, Springfield, Ill. Weidenhoff Products, Chicago, Ill. Wright Mfg. Co., Lisbon, Ohio



Goldenrod Section

To make it easier to locate items of automotive service equipment in general catalogues, many automotive jobbers are grouping all the Service Equipment in one section of their catalogue and printing this Service Equipment Section on paper which is goldenrod in color.

In order to keep up to date on service equipment you have only to pick up your jobber's catalogue and run through the goldenrod section.

This plan is for your convenience in locating

and ordering Service Equipment.

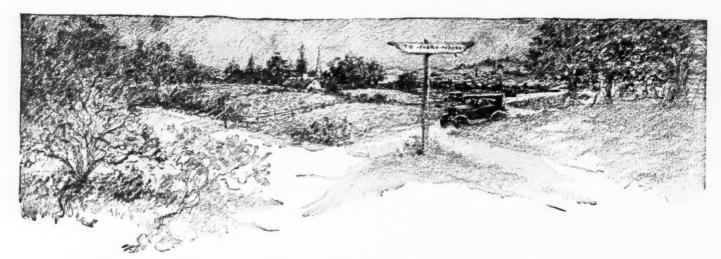
When you see a catalogue which has a thick section printed on goldenrod colored paper you can be almost certain that the particular jobber who published this catalogue is specializing on Automotive Service Equipment.

This is a result of the cooperation between the Service Equipment Associates listed opposite and the automotive jobbers throughout the country.

## SERVICE EQUIPMENT ASSOCIATES TOWSON MARYLAND

Or Communicate with any member of Service Equipment Associates listed at left





## The Mothers of the Race

"I will tell my story," a young woman wrote, "the story of a business woman and her car.

"THE finest mother in the world is ill and nothing will aid her so much as being in the fresh air. So we have started what we call our 'automobile fund.'

"I wonder if I can make you understand what it means to us to dream about the car we are going to have. When it comes I want my mother to be in it all day long. I want it to take her away from the humdrum of the city; out into the quiet where she can think in peace and leave behind the disappointments and failures of life.

"There are many shut-in people in this little town and some of them will go with her when I cannot go. For we want the car to be a happiness car'every day and all day.

"Are we too ambitious, in wanting all this? Are we to be criticised for wanting a little joy, to live a little as we go along? If you could share the thrill of our planning you would not say so. It used to seem as if our saving were so futile—a struggle for nothing but shelter and food. But now we have a vision—and sometime it is coming true."

This young business woman is one of thousands of women who have written about their automobiles. Most of them are mothers. They say that the car has pushed back the horizon of a mother's world; baby legs no longer measure the extent of her travels.

Wherever there are roads she can go with her children; her neighborhood is as broad as the miles that can be covered between dawn and dark.

Surely no greater tribute can be paid to the automobile than this—it has enriched the living of the mothers of the race.

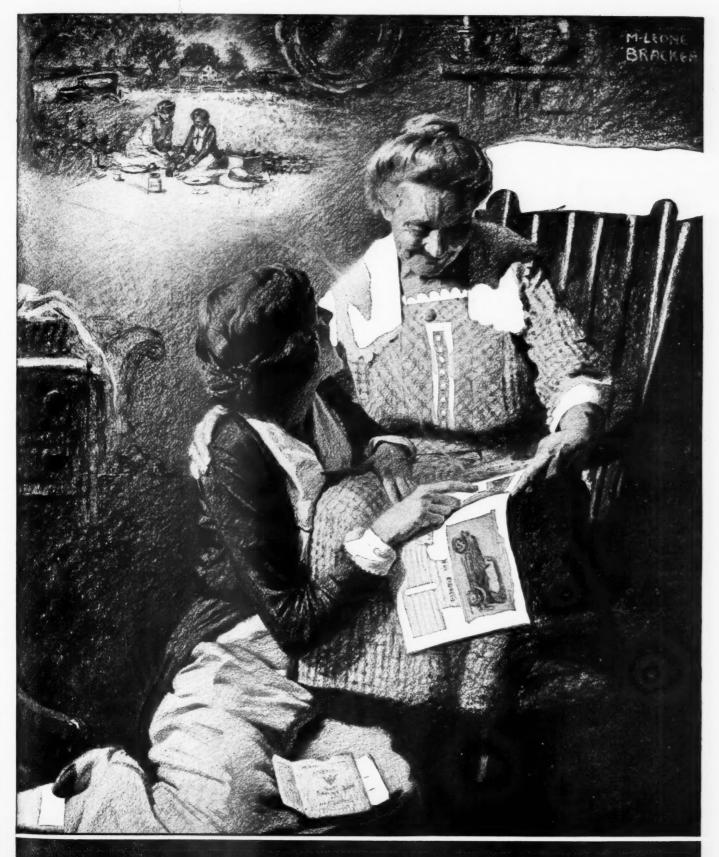
RODUCTS OF GENERAL MOTO

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CADILLAC
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OAKLAND
OLDSMOBILE
GMC TRUCKS

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General Motors cars, trucks and Delco-Light products may be purchased on the GMAC Payment Plan. Insurance service is furnished by General Exchange Corporation.





MOTORS

## Holmes V Tow Bars,





## Reduction in Price — — Increase in Quality

Effective October 1, 1924, the price on Holmes "V" Tow Bars is reduced to \$20.00 and the Holmes Wrecker No. 110 to \$95.00. This reduction is the direct result of the tremendous increase in output and improved manufacturing methods, together with the Holmes policy of giving the user the highest type equipment at the lowest possible price.

When handling a wrecked car suspended, Holmes "V" Tow Bars prevent the towed car from swinging from side to side, or from jamming into the service car. They hold the towed car in perfect alignment, make it track perfectly and make possible a quick get-away and a quick stop.

When Holmes "V" Tow Bars are used, the towed car need only to be lifted a few inches from the ground, which means a low center of gravity and less strain on the service car.

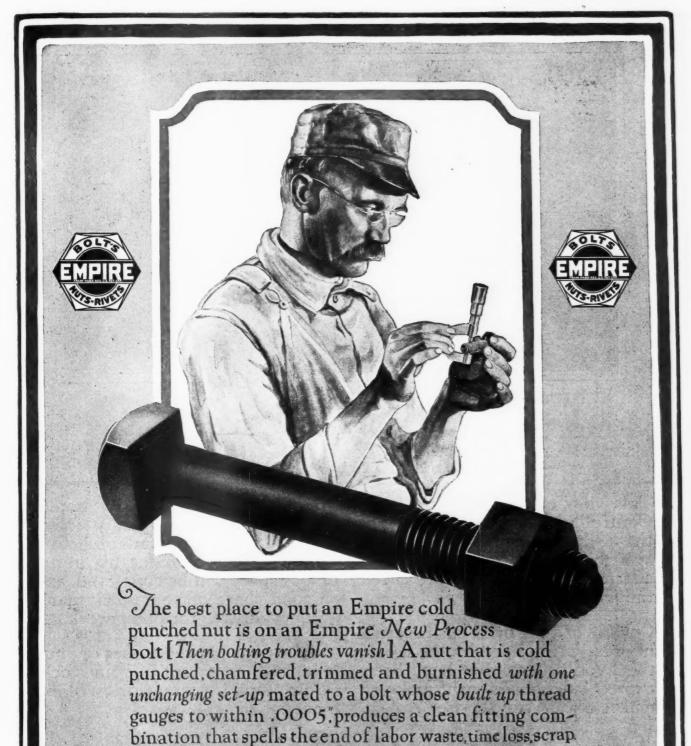
You need Holmes "V" Tow Bars regardless of what wrecking equipment you use. These bars are standard equipment on Holmes Wreckers No. 485 and No. 250, and optional equipment on Holmes Wrecker No. 110.

Write your Jobber or this Company for catalog giving full information about Holmes "V" Tow Bars, Holmes Wreckers and other Holmes Garage and Shop Equipment.

ERNEST HOLMES CO.

CHATTANOOGA,

**TENNESSEE** 



## RUSSELL, BURDSALL & WARD BOLT & NUT COMPANY O

PORT CHESTER.N.Y.

PEMBERWICK, CONN.

CHICAGO

SAN FRANCISCO

ROCK FALLS.ILL.

Makers of Bolts, Nuts and Rivers Since 1845

## LYON AUTO PARTS CONTROL



## No "Hide and Seek" for Auto Parts

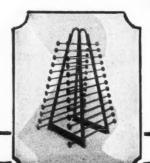
This view of a Lyon Auto Parts Control System is characteristic of the orderly neatness, the quick availability and the good display effected when auto parts are stored the Lyon way.

Control of your parts business will be greatly simplified by the use of the Lyon systems that have been expressly designed for the make or makes of cars you service. Inventory will be easily taken. Low stocks will be readily noted, wanted parts laid hands on before the customer changes his mind. Floor space will be conserved, and a good share of your stock man's time made free for other work.

Write us giving the makes of your cars and the extent of your stock. Complete information will be sent to you.

## Lyon Metallic Manufacturing Company

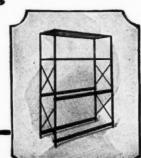
Aurora - Illinois



Lyon Auto Parts Control Systems are sold by leading Automotive Jobbers



for every storage need





Type "Z" U. S. Portable Electric Drill illustrated. Particularly designed for general use in garage or service station. Capacity ½". Operates on A. C. or D. C. current. Load r. p. m.—450. Weight 14 lbs. Jacobs Chuck Standard Equipment

\$55

WINTER business profits hinge a good deal upon how well you are equipped to render good service at reasonable prices. Is your equipment ready? Check up on your repair methods. Where can they be bettered? What about your method of drilling?

Remember, on most jobs you'll find a need to drill holes. Don't let profits leak out here. Get a good U. S. Portable Electric Drill now! We say get a "U. S." because it drills quickly at less cost, because it is full powered, never overheats, is easy to handle in awkward places and is strongly built without excess weight which means you can use it continuously for hours without tiring.

Write for catalog 21-B and new reduced prices on the U.S. line that give you more value for your money. Also ask for our new "Handbook of Portable Electric Drill Practice."

(Jobbers write for full particulars)



## **UNITED STATES** Portable Electric

"The Good Mechanic Knows"



## Get this FREE Handbook!

This new "Handbook of Portable Electric Drill Practice" will prove a revelation to you as to the many jobs a portable electric drill will help you do besides just drilling. Write for your FREE copy now!

## Me UNITED STATES ELECTRICAL TOOL CO CINCINNATIONIO.

District Sales Offices and Service Stations: toston Detroit Philade
suffalo Houston Pittsbu
hicago Kansas City St. Lo
leveland Minneapolis Toledo
New York
Complete stocks carried in all Service Stations.

## GATES HOSE

"The Standardized Radiator Hose"



Cooler weather—antifreeze mixtures soon go into radiators—a good time to protect customers by giving them the radiator hose with the tougher rubber lining. That's the Gates Vulco.

Made by the World's Largest Manufacturers of Fan Belts. -and again Sundstrand scores/



with the greatest value ever offered in an Adding and Figuring Machine

Terms if desired

Special-Junior Adding and Figuring Machine

Machines in this price class have heretofore offered only adding and listing service. The new Sundstrand Special-Junior Model gives you these features PLUS direct subtraction and automaticshift multiplication. Undoubtedly, there has never been so much value put into one machine at such an amazingly low price.

Like all Sundstrand machines, this new model has the famous 10-key keyboard-speedy, convenientinsurance against errors.

Check over the advantages offered in this new model and you will quickly understand why it has met with such sweeping success. Note these fea-

- adding - listing - direct subtraction automatic-shift multiplication-ten-key speed-automatic column selection — portability — convenient desk size—one-hand control—automatic subtotals—visible writing—forced printing of totals. All this at a lower price than was ever before thought possible!

Before you buy any adding machine investigate what this new model Sundstrand offers you. Compare it for performance, versatility, ease of operation, range of usefulness, speed and price. We'll be glad to demonstrate without any obligation on your part. Send the coupon or address Dept M-10 for part. Send the coupon or address Dept. M-10 for illustrated folder.

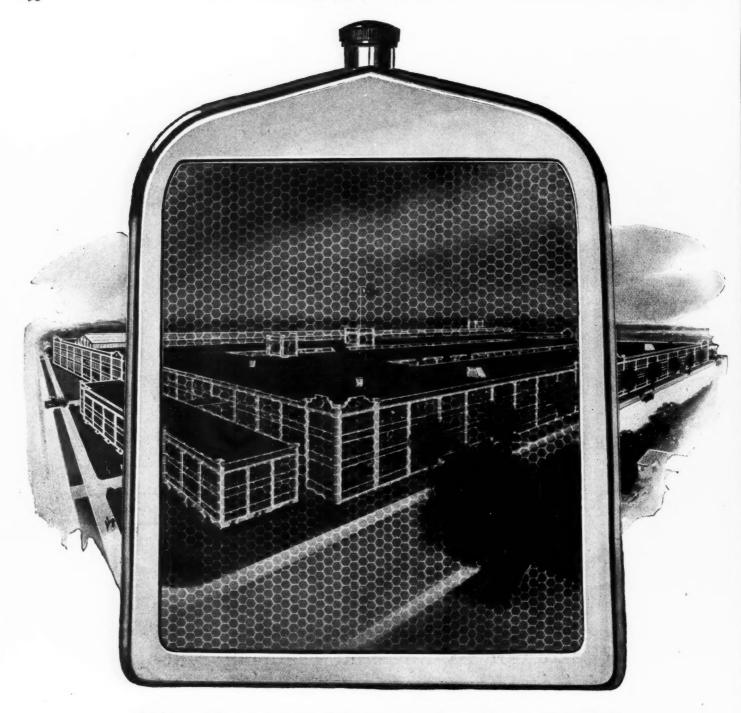
THE SUNDSTRAND ADDING MACHINE COMPANY, Rockford, Ill. Sales and service stations everywhere in the United States and foreign countries.



A complete store service in one machine at one low cost—cash register and adding machine. Credit file furnished at slight extra cost. Saves hours of time, guards against errors, protects profits. Classifies sales by clerks and departments. Makes a nonerasable record. Forces correct indication and recording of cash, credit, pald-out, etc. You can read totals at any time. Tape rewinds and locks in machine.

Famous 10-key Sundstrand Adding Machine—adds, multiplies, divides, etc. Prevents errors in checking sales slips and inventory sheets, footing ledger, bank balance, etc. Range—1c to \$99,999,99.

Rockford Send me				ing the	machine	Th
checked.	an u	ctairs	Concern	ing the	macmine	
Sunds Figur	trand			r Mod	el Addi	ing
☐ Sunds				Cash Re	gister.	
Name			**********			
Name Addr <b>e</b> ss	*******					



The largest factory in the world devoted exclusively to manufacturing automobile radiators.

## HARRISON RADIATORS

HARRISON RADIATOR CORPORATION, LOCKPORT, NEW YORK



THE MARK OF RADIATOR SATISFACTION

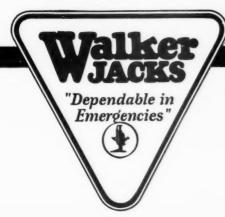


I want every garage and service station owner to know that by installing a new No. 720 Walker Roll-A-Car, he will overcome the difficulties he is now having in moving new model cars designed with low clearance axles and equipped with Balloon Tires.

The reputation already established by Roll-A-Car for quality and performance, is his guarantee that the new No. 720 with its low initial lift will answer all of his new lifting problems.

Millard Chalker

President.



WRITE FOR MINIATURE CATALOG OF WALKER JACKS

Walker Manufacturing Co.
Racine, Wisconsin



Weston's Model 280 Testing Set for garages

## Six Good Reasons for the Weston Test Set—

30 volt range-determines voltage of battery and of generator.

3 volt range—for testing individual storage battery cells. 100 millivolt range—tells the "drop" over segments of the commutator of the motor or generator.

3 ampere range—for testing current required by single lights.

30 amperes range—shows current required by complete lighting circuit, magnitude of leakage currents, charging rate, etc.

300 ampere range—for determining starting current. Locates shorts, grounds, open circuits in starting motor, generator or wiring.

Regardless of your requirements this Weston model 280 enables you to make any electrical test quickly, accurately and efficiently.

### **Weston Complete Testing Equipment**

Model 441 Fault Finder.
For utility use and general testing.

Model 443 Battery Voltmeter.
For taking E. M. F. of individual cells.

Model 354 Dashboard Ammeter.

Model 280 Testing Set.
For every known electrical test.

Booklet "H" illustrates, describes and gives prices of all Weston Instruments and accessories for automotive service. If only to be properly informed you need this booklet.

Weston Electrical Instrument Co.

10 Weston Ave.,

Newark, N. J.

## WESTON

Electrical Indicating Instrument Authorities Since 1888

STANDARD The World Over



## Best Sellers for Thirty Years

THOUSANDS of dealers have successfully handled Columbia Eveready Dry Batteries for ten—twenty—thirty years! From the beginning these batteries prove that they are money-makers and tradebuilders; the years give emphasis to that fact. Sell Columbia Eveready Batteries. Order from your jobber.

Manufactured and guaranteed by

NATIONAL CARBON COMPANY, Inc.

New York San Francisco

Canadian National Carbon Co., Limited, Toronto, Ontario

## Columbia EVEREADY Dry Batteries -they last longer

Gas engine ignition, tractor ignition, starting Fords, firing blasts, heat regulators, doorbells, buzzers, ringing burglar alarms, protecting bank vaults, calling Pullman porters, motor boat ignition, telephone and telegraph, electric clocks, lighting tents and outbuildings, running toys, radio "A".



"YOU OUGHT TO MAKE CHRISTMAS AUTOMOTIVE"



## Every Service Station Needs It

#### Has Many Uses

Seals all gaskets and screw thread connections. Prevents sulphate corrosion on battery terminals.

Makes leak - proof hose connections.

On spark plug threads.

On Felt Washers.

On Rusted Tire rims.

Manifold Paint.

Bolt Threads.

Spring lubricant, etc.

69,000 automobile repair shops in U. S. can use Key Graphite Paste, with profit on many of their jobs.

You must use a filler on gaskets. Key Paste is the right thing.

And so on thru many other places—to stop leaks, squeaks, rust and rattles—to prevent battery corrosion and stop sulphation—THIS IS THE GREAT UTILITY.

Jobbers and Dealers WRITE!

## KEY BOILER EQUIPMENT CO. 27th and McCasland Ave. E. St. Louis, Ill.

We Let You Try It Before You Buy It)

~ 4 8	FREE	1
E CAT	).	
OI	obligation, a sa	m-
phite Paster		
	W.	A.10-16
	E CAN IPMENT CO Ind Ave. Inout charge of Paste.	ohite Paste.



## This display rack increases your fan belt sales



THIS is but one style of the handsome display racks that are helping many dealers sell more Graton & Knight Fan Belts.

Put one of these racks on your floor. Then watch the sales jump.

It is a good-natured reminder to your customers. It tells them that you sell Graton & Knight better Fan Belts.

Better because they are made of famous Graton & Knight Standardized Leather. Tanned and curried to resist motor heat, oil and water. Can't fray. Carefully made to hold their shape. Don't need constant tightening. Grip the smallest pulleys firmly. Run at low tension, so bearing wear is reduced.

There is a Graton & Knight Fan Belt standardized for every truck and pleasure car. Made in Flat, "V" and Link "V" types. Priced to give you generous profit. And every time you sell one you are selling long-time service that means a satisfied customer.

Write your jobber to-day for full information about these useful display racks and Graton & Knight Fan Belts.

THE GRATON & KNIGHT MFG. Co.

Tanners—Makers of Belts and Other Leather Products

Worcester, Mass.



## **GRATON & KNIGHT**

Standardized

LEATHER BELTING



## **Broadcaster Service**

If you are in the market for something that you do not find advertised in this paper, tell us and we will promptly send you a list of the leading manufacturers.

If you want anything, and do not know how to get it or to whom to send your inquiry, write us and we will do our best to help you.

For Broadcaster rates in Motor Age, Motor World, Automotive Industries, Automobile Trade Journal, Distribution & Warehousing, address the Class Journal Company, 5 So. Wabash Ave., Chicago, Ill., 239 W. 39th St., New York City, or Chestnut and 56th Street, Philadelphia.

## The Broadcaster

A DEPARTMENT THAT WILL FIND WHAT YOU WANT

The Broadcaster Department Appears in This Issue on Page 113.



Not much talk necessary—just show a Ford or Chevrolet owner a Tasco Gas Gauge—tell him the price and you'll usually make a sale.

For the Tasco Gauge is just what these two classes of motorists have been looking for—a low priced dur-

able gauge that tells at a glance the amount of gas in the tank.



#### At the Pump

A great place to sell Tascos. After filling his tank, just screwthe

Gauge in place of the regular filler cap—then show it to him! He'll see at a glance the amount of gas in his tank and realize what a trouble saver the Tasco is. The low price (only \$1.25) usually clinches the sale.

Liberal Discounts. Write. Please mention your jobber's name.

THE AKRON-SELLE CO.
Akron Ohio

TASCO GAS GAUGES

Ford and Chevrolet

## One Day Service

Watkins helps you keep delivery promises. Watkins Rebabbitting Service consists of complete rod rebuilding—new bearings tinned in and broached to mirror finish. New bolts, nuts and laminated shims are supplied on popular cars and bronze piston pin bushings if used.

Day
Service
From the
Factory
Nearest You

One



Chicago, Ill..... .Berguson - Skinner Corporation. ... Ripley Motor Services, Inc. Hartford, Conn. Indianapolis, Ind.....Indiana-Watkins Mfg. Co. Kingston, Ont.......Watkins Mfg. Co., of Canada, Ltd.

Los Angeles, Calif...Wright Mfg. Co.

Memphis, Tenn......J. B. Cook Auto Machine Co.

New York, N. Y....Lake Sales Company.

Omaha, Nebr......Interstate Machinery & Sup-Ltd. Portland, Ore.......Factory Motor Car Co. St. Louis, Mo......H. & H. Machine Co. Seattle, Wash......Solon Grinding Co. Syracuse M. V. Solon Grinding Co.
Watkins Manufacturing Co., Syracuse, N. Y.. of New York. Stewart-Burgan Co. Toledo, Ohio ... Washington, D. C...R-L Motive Parts, Inc. Waterloo, Ia......All States Rebabbitting Serv-Waterloo, Ia ..... ice. Wichita, Kans .......... Watkins Manufacturing Co.





A glance at

"Built like a High-grade Distributor"

shows why it is the preferred timer. Its precise construction, copper brush and contacts, one-piece Bakelite shell and raceway are strong arguments in its favor. In addition, it is a wipe-. contact timer that needs no oiling.

> For better timer sales, ask your jobber for BELL Timers. Write us direct if he doesn't carry

#### Bell Manufacturing Co.

13 Elkins St.

Boston 27, Mass.

Makers of the unique

#### **BELL DASH LAMP**

for Fords and other cars. Out of the way when not in use. Ask about it.





#### K-D Lamps Make Excellent **Xmas Gifts**

The Fashion has been established and you'll sell more K-D lamps than ever for Xmas gifts. Time now to replenish your stock so you can take care of the demand.

Every lamp is packed to make an attractive Xmas gift, if so specified on your orders.

Order these two lamps for Xmas selling:

## DRUM TYPE SPOT LAMP

Specially designed to har monize with latest type heal lamps. Made in two finishes. ALL NICKEL 0 BLACK AND NICKEL. Lamp is double shell construction, made entirely from brass, including bracket therefore will not rust o

All Lamps in Holiday Wrappings



ade in two types, for car, the open car type and suitable for use on quare windshield. furnished for attaching. in individual carton. DRIVING LAMP

drum type lamp, with special et, can be attached to frame of on fender, cross rods or cowl of and can be so wired that when lamps are dimmed, this will Can be thrown to side of road at an approaching car may be passed in safety.

passed in safety.

Construction is double shell type, outer body is drawn in one piece from suitable gauge metal, all plated parts made from brass, highly polished and finished.

Reflector is parabola shaped, made from brass, highly polished and plated, either double or single wiring system.

Bulbs are 6-8 volt, 21 c. p., type Finished in black and nickel only

The K-D LAMP CO., Cincinnati, O.

#### If you want to sell or rent your business vou can

- (1) Put signs in your windows-to attract the attention of those who pass by.
- (2) Put an ad in your daily paper—to be seen by some of your local prospects.
- (3) Put an ad in your business paper to be read by others in your line of business, some of whom may be looking for just such an opportunity as you have to

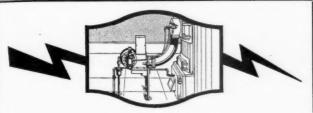
There are thousands of men in this industry who are ambitious to be their own boss-they have saved their money to buy a business of their own and might pay you a higher price than you have yet been offered.

The cost is too small to cause hesitation. Undisplayed ads are only 6c a word. The quicker you send your copy the sooner the dividends on your investment.

## The Broadcaster

A DEPARTMENT THAT WILL FIND WHAT YOU WANT

The Broadcaster Department Appears in This Issue on Page 113



#### For a Few of You--AN OPPORTUNITY

For a few of you who are reading this, here is an opportunity to turn your past training and experience in the automobile business to greater profit in a new field.

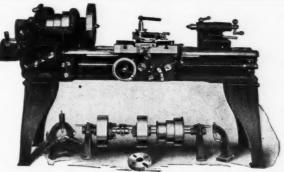
This opportunity can be for only a few of you because the territory still available is decidedly limited. And besides, only aggressive, go-getters—men who can point to their successes—will be considered.

The Product: An automatic electric ignition oil burner. Soundly established; sold internationally. Quiet. Safe—listed as standard by the Underwriters Laboratories.

The Opportunity: By establishing a sales and service organization for this burner, to get in a relatively new and rapidly growing industry and to make more money than you are making now.

Write. Give full particulars as to your financial ability and your sales and service experience in your present business. If you measure up and if your territory is still open, we'll show a proposition you can't afford to miss.

HOME APPLIANCE CORPORATION
2818 Locust Blvd. St. Louis, Mo.



## Now Is the Time

to select that Carroll-Jamieson Garage Lathe, built especially for service station use. The product of lathe specialists for more than 20 years. Nothing cheap, nothing freakish. Everything works. Guaranteed accurate within .001 in. to 12 inches.

Three Models, 12 in, 14 in. and 16 in., 5 ft. to 12 ft. lengths of bed. Quick-change, gears, automatic cross-feed and longitudinal feed. And think of it—prices begin at \$330.00. Don't struggle along without a lathe, when you can buy one for so little.

Get our descriptive matter and discount sheets before placing order elsewhere

#### Carroll-Jamieson Machine Tool Co.

Ratavia.



Ohio



## Get a Manley



Portable Hoist. A Universal Garage lifting method without an equal. The Manley Hoist is superior because the chains can be positioned anywhere between the legs, thus raising the load always vertically. The legs are doubly braced and will not spread. Automatic brake to lower the load. Legs folded together and Holst may be placed against the wall entirely out of the way. Two leverages with corresponding speeds. Light, strong and easily moved.

Scnd for Catalog.

Send for Catalog.

MANLEY MFG. CO. York, Pa.

## on-Koro **BATTERY LIFE**

Every battery terminal should be thoroly cleaned and NON-KOROD applied. Prevents corrosion and sulphation. Increases battery life. Insures full service. Great saving. Will not become brittle. Always efficient. Jobbers and Dealers can supply the trade.

Write for sample and prices, mentioning jobber's name.

National Cable Compound Co., Inc., Mitchell, Ind.

CORROSION SULPHATION SHORTING





The SPORT DUPLEX A crash-resisting, sporty design=\$14.50 to \$24.00

There is class in every line of every model of spring bumper New Era produces; and a protection that must be unique or the manufacturer could not give it its famous life-long guarantee. We mean every word of that guarantee, too.

NEW ERA SPRING & SPECIALTY CO., GRAND RAPIDS, MICH.



The Bearings Company of America, manufacturers of STAR Ball Retainers, for Thrust, Magneto and Cup and Cone types of Bearings. Complete Thrust Ball Bearings, Angular Contact Thrust Bearings and Angular Contact Radial Bearings (made to your B/P's and requirements).

THE BEARINGS COMPANY OF AMERICA LANCASTER, PA.

> Detroit Office. 1012 Ford Bldg.

## See the **Broadcaster** Department

**Page** 113

### Jack—For Balloon Tires



The Springfield Jack No. 9 especially designed for balloon tires

Double Screw-Ball Bearing Low Placement—High Lift Height when closed, 7 inches Extends to 17 inches.

Convenient handle excellent workmanship and quality.

Dealers-Jobbers-Write
us for discounts

THE SHAWVER CO. Weight 8 pounds Capacity 1 ton Price \$4.75 Springfield, Ohio

### KOCH KREEPER No. 3

Supports the head in three different positions while working under the car. Rockies, \$3.00—West of Rockies \$3.50. Eliminates body fatigue and neck Cash with order; shipping charges cramps. Padded head rest can be adjusted to any position by slight pressure while worker is on creeper, sturdy and durable. Will last instance with the control of the con

FT. RECOVERY STIRRUP CO. Ft. Recovery, Ohio PAT. PENDING

### ORE DOWER For Ford Cars and Trucks

Replaces the regular Ford Transmission

SIMPLEX 3 SPEED Sliding Gear Type

Have three speeds forward and one reverse, replacing the regular Ford transmission-drums, bands and all. The low speed is lower than the Ford, therefore, more power—the third is the same as the Ford and the second is half way between.

"It will pull like everything"

Lit's ruggedly built with oversize alloy steel gears. Multiple disc clutch. Foot brake on jackshaft outside of case. Hyatt Roller and Genelite bearings. No cutting or machining—installation easy.

E. D. & A. F. CRONK, Inc., 140 Hotel St., Utica, N. Y.

#### IMPROVE YOUR WINDOW DISPLAY

WITH CAMDEN ARTCRAFT

#### Window Valances



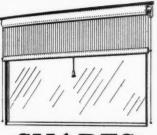
They create attention—talk for you—add character—carry your name or slogan—and last for years.

Complete cost is often less than a common painted sign.

Tailored Valances per foot \$1.50 up. Linnette Val-ances per foot 90c up. Designs and estimates without obligation.

CAMDEN ARTCRAFT CO.

160 N. Wells St., Chicago



HUDSON and ESSEX COACHES, FORD TUDOR, MAXWELL CLUB SEDAN, and HUPMOBILE CLUB SEDAN

For other cars simply give name, model, 319 E. Third St., Urichaville, Ohio year and exact glass measurements.

Many dealers find it profitable to equip their cars with "Better Shades Built By Rice" before demonstrating. They help sell the car by adding to the appearance and comfort.

comfort.

We use only a fine quality silk material in colors to harmonize with the upholstery. This is double stitched and mounted on all-metal rollers with nickel plated brackets. We can furnish a washable fabric that can be cleansed with soap and water.

We allow liberal discounts and can make prompt delivery if you will advise us of your probable monthly requirements.

Write today for particulars

Chas. W. Rice & Co.





Tells Cylinder Wear Piston Ring Size.
No Other Tool Required. Price \$17.50

Buy from your Jobber or send for book. B. C. Ames Co., Waltham, Mass.

#### **SPECIALISTS**

#### In Armature Rewinding



\$3.25 other

Once a customer always a customer. Try us and be convinced.

Get our complete price list. Write for it today.

PIONEER ARMATURE CO., Inc.

2805 Cottage Grove Ave.

Chicago, Ill.

#### Apex Vernier Dial

Geared condensers requiring many holes in the panel and a careful lineup of pinion shafts are a waste of time and a bother. This marelous instrument provides the fine adjustment for tuning in distant stations. The ratio is 10 to 1. It can be quickly applied to any shaft:

applied to any shaft.

This Apex Vernier Dial is a prof the long and favorably known Electric Manufacturing Company, are producing it under the same acting principles which have matching great success of their Auton products. Every accessory disould have a radio department, no radio department is complete out the Apex Vernier Dial and Apex Radio Products.

nt dealers should write at once for complete info

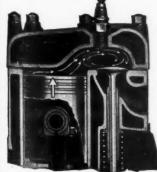
APEX ELECTRIC MFG. CO.,

1410 W. 59th St.,

Dept. 918

Chicago

#### Jhe Ricardo Head



Accelerating alertness, increased power output, higher speeds, finer flexibility, and unrivaled low operating cost are now established as the standards of Ricardo Ell Head engine performance. Those manufacturers and dealers who can point to this feature on their important list of specifications will naturally realize unusual advantages in their sales effort.

#### WAUKESHA

Motor Company ENGINE BUILDERS Waukesha, Wisconsin New York, N. Y. Get This "Pioneer" Garage Special Electric Drill



and Valve Grinder

Greatest time and money saver, as well as money maker, for your shop—

"It Will Do The Work"

Louisville Electric Mfg. Co.
Louisville, Ky., U. S. A. Incorporated Louisville, Ky., U. S. A. C. E. Willey, Pres. J. B. McFerran, Secy.-Treas.



The Aristocrats of Motordom

7Models-Open and Closed Distributors in principal cities. Open territory now being closed.

Kissel Motor Car Co. Hartford, Wis.

HYMAN PRESSED BODY CO.,

YOU can handle this body PROFITABLY All steel construction provides lightweight with extreme strength. Outlast chassis. One design fills most light truck user's requirements. Ton and Half-ton sizes. Shipped knocked down. Low priced. Distributor and dealer terms liberal. Write.

Huntington, W. Va,



Adjustable. Two sizes will clamp any hose of any diameter. Made from cold rolled steel out of wire. No rough edges to cut hose. Put on in less than a minute. Everlastingly leak-proof. Order Universal Hose Clamps. Trademark on every clamp and carton. Get them from your jobber—or write us.

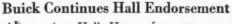
UNIVERSAL INDUSTRIAL CORP.

Hackensack, N. J.



Attractive in appearance, with cleaning features of removable heating coil with no connecting joints inside the heater pan to leak. Meets instant approval. No odor or noise. Easily installed and operated. Will boost your winter sales—get our attractive trade proposition.

THE NORWALK AUTO PARTS CO.



After using Hall Hones for over one year Buick test out the New Hall Hone and approve of it. It is the only Hone endorsed by Buick.

THE HALL CYLINDER HONE CO. 435 Dorr St., Toledo, Ohio





Goodrich Cable is sold in lengths found to be the most popular with the average buyer—coils of 100 ft. packed in individual cartons. Both shop men and car owners like the clean 100 ft. package idea—and this leads to quick and profitable sales. Send for samples, prices and discounts.

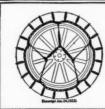
THE GOODRICH-LENHART MFG. CO., Hamburg, Pa.

*END•PLAY* 



WITHOUT PULLING THE MOTOR
THE C. A. ADJUSTABLE CENTER BEARING CAP
corrects Ford crankshaft end play and sets magneto for
highest efficiency without removing the motor. Easily
and quickly installed. Guaranteed for one year. List
price \$3.75. Ask your jobber or dealer or write us direct.

ADJUSTABLE BEARING CO., Inc. Brazil, Indian



CHANEEZE

IMPROVED ANTI-SKID CHAIN TIGHTENER Helps Chain to Creep While Taking
Up the Slack
An exclusive sales feature!
Retall Price, \$1.00 Pair.

Dealers—Jobbers—Write—Discounts Liberal.

ELECTRIC PARTS CORP.
318 E. Geneseo St. Syracuse, N. Y.

Meachem Gear Rings for Fly Wheels

Quality rings at lowest prices. Get our list.

MEACHEM GEAR CORPORATION Syracuse,

CARBURETOR

More **Power** 

Fuel Zenith - Detroit Corporation, Detroit, Mich

Send U. S. Your Armature Repair Work

ARMATURES REWOUND



MOST ANY TWO UNIT GENERATOR ARMATURE

ALL WORK GUARANTEED-WRITE FOR PRICE LIST U. S. AUTO SUPPLY CO., 3845-49 S. WABASH AVE., CHICAGO

\$700 Profit in One Month

That's what one distributor made. He's only one of many doing a big business. Dealers, too, are making sales by the dozens. Few accessories in recent years have been as popular as the DUPLEX

Second Spare Tire Carrier & Rim Tool Carries spare tire—also expands and contracts rim when changing tires. Two tools for the price of one. Write for details.

TRIPP-SECORD & CO. 606 Kerr Bldg., — Detroit, Mich.



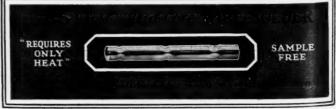
WELCO "NEVA-LOST" GAS TANK CAP \$1.50

The Welker-Hoops Mfg. Co., Middletown, Ct.





Controls the springs both ways—
up or down. The greater the
shock the greater the hydraulic
force—a smooth, even force that
absorbs all shocks. The 2-Way
gives great and lasting satisfaction. Owners are Boosters. Our
franchise will make you money.
Write for particulars.
AUTO SPRING CONTROL CO.
Jamestown, N. Y.



24

#### There Simply Isn't Any Better Flux Made Than Rubyfluid!



A complete substitute for dangerous acids, Zinc Chloride, Salammoniac and other mixtures commonly used as a Flux. Ruby Fluid is quick acting, anti-rusting and is always ready for instant use. Ruby users include the foremost industries of the countries. try.

Send for generous Free Sample

COMBINATION SOLDERING AND TINNING FLUX THE RUBY CHEMICAL CO.

68-70 McDowell St.

Columbus, O.

834 S. Oak St., Casper, Wyo.



give Longer and More Active Life

406 A Sixth Ave. So.

"Pore-Blown" plates have greater capacity Information

in this Catalogue Our new com-

Our new complete catalogue on Battery Parts has just come from the press. You'll find a lot of useful battery information in it.

than you'll find in most plates, and for that reason the battery that is built around them responds with unfailing, generous current. Long life is not sacrificed for power, however, in "Pore-Blown" plates. Users everywhere buy them for their durability.

MONEY MAKING MACHINES

STORMIZING machines are truly money makers. They enable you to make biggest profits on every overhaul job. They handle all your

overnaul job. They handle all your cylinder renewing, accurately and efficiently, enabling you to turn out the high quality work that wins your customers' lasting approval. The automatic time and labor saving features make high arcfite.

ing features make big profits possible by lowering operation costs. Write for the Storm Book, "Modern Cylinder Methods"

DIERM MFG. CO.

Minneapolis

General Storage Battery Co. 2005 Locust St. St. Louis, Mo.

STOP THAT MOTOR NOISE

Install LANGE'S CAM SHAFT ANTI-RATTLER for FORDS in five minutes. Takes out end play. Removes backlash in gears. Doubles life of timer. Roller runs true in its orbit and does not corrugate it. Makes a positive ground for the ignition not thru the oily camshaft. Retails \$1.00

Our display easels sell them.
Discount to Dealers.

Lange Auto Specialties

Write for the Book "AIR PROFITS" describing many new uses for com-pressed air. Shows how to make an air compressor earn greater profits. BRUNNER MFG. CO.



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Dash Clock Value

The Minute Meter is biggest money's worth ever offered the trade. Fits any dash, wood or metal. Dust and vibration proof. Accurate. Guaranteed. Made by clock makers of forty years' experience. Take off to wind and set in a jiffy.

Radium Dial \$3.50. Canada prices add \$1.00. Fast, surefire seller. Best ever for the money—order now.

The Lieux Clock Manufacturing Co. Inc.
Waterbury - Connecticut - U.S.A.

fit behind piston rings and keep them in perfect contact with the cylinder walls at any motor speed or temperature.

RAMSEY ACCESSORIES MFG. CORP., ST. LOUIS, MO.

INNER RINGS

#### GREEN HIGH SPEED CAMSHAFTS Replacement for FORDS and other cars. Higher speeds and more power possible. Gasoline saving. LOW PRICE. Write for big discounts. QUALITY at a

Green Engineering Co., Dayton, Ohio



sure perfect round-ness, sold at almost the price of a snap

ring. Wilkening Mfg. Company 15th and Mt. Ver-non St., Philadel-phia, Pa.

#### THE BEST TOOL IN THE SHOP!

Every

needs

one



Handy for the small iobs

Every purchaser of TORIT ACETYLENE TORCH No. 13 says it beats anything they ever saw. We guarantee it.

USES NOTHING BUT ACETYLENE. Simply connect to Pre\_to tank. light gas,

nd the outfit is put to work.

Complete as above, with connection for Presto auto tank, and full instructions \$7.50 in U. S. A.
Order from your Jobber's salesman, or \$10.00 in Canada

ST. PAUL WELDING & MFG. CO., 169 W. Third St., St. Paul, Minn.





The LANDIS 4-A Special GARAGE Grinding Machine is built ESPECIALLY for repair shop work. You don't need a manufacturing machine—don't get one. The 4-A Special is perfect for repair shops. Quick and easy change from job to job. Simple to operate. ACCURATE. Built by world's largest makers of grinding machines. More value for your money, Catalog.

Landis Tool Co., Waynesboro, Pa.

New York Office-30 Church St.



**FORD** 

Automatic, safe and positive protection against theft. Approved by Underwriters' Laboratories. Earns lowest theft insurance rate. Mitchell Specialty Co., Philadelphia, Pa.



BRAKE LININGS and CLUTCH FACINGS

Always used where safety and service are the first and only consideration.

KELSO M'F'G CO.,

TRENTON, N. J.

I



A WELL BUILT CAR

**Elcar Motor Company** 

Elkhart, Indiana



#### **BUTLER SPRINGS AND THE** ACE OF CLUBS ALWAYS WIN

Butler Springs are made of very fine grade steel. They are carefully heat treated and tested for hardness and strength.

Order your Ace of Springs today

BUTLER AUTOMOTIVE SERVICE CO. EASTON, PA



Write for Special Book Garage Fronts THE KAWNEER CO., 1219 Front St., Niles, Mich.

#### RADIATOR CORE EQUIPMENT

For the Complete Manufacture of

RADIATOR CORES

Ask Us About This Equipment We make the best radiator test plug

RADIATOR ENGINEERING CO.

Toledo, Ohio

#### Gas Appliances

Metal-Melting Soldering

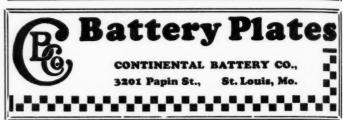
**Heat-Treating** 

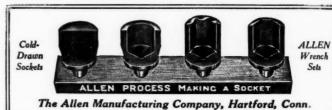
OHNSON GAS APPLIANCE Codes Repids 1000A

Pacific Coast Repr., C. B. Babcock Co., San Francisco, Calif. New York Office—277 Lafayette St.









#### THE QUINCY SILENT AIR-MASTER

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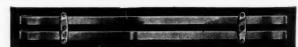


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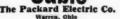
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For Ford Cars and Trucks
Is as reliable as the Ford Car itself and assures a positive cooling system that constantly functions. No more overheating—No more freezing in travel—Made engineeringly correct of best materials—quickly and easily installed. Write for Dealer Discounts and complete information.
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"It pays to buy a Kellogg"

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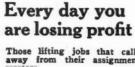
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**ROLLER BEARINGS** 

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Those lifting jobs that call men away from their assignment are wasters.



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The Canton Foundry & Machine Co.

Canton, Ohio New York Office, 203 East 15th Street



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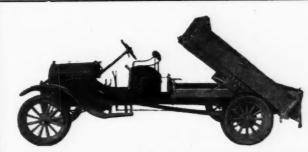
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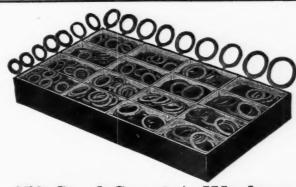
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